S. HRG. 100-694

FUTURE MANAGEMENT OF THE ARCTIC NATIONAL WILDLIFE REFUGE

HEARINGS

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDREDTH CONGRESS

FIRST AND SECOND SESSIONS

ON

S. 1804

A BILL TO AMEND THE NATIONAL WILDLIFE REFUGE ADMINISTRATION ACT AND THE FUTURE MANAGEMENT OF THE ARCTIC NATIONAL WILDLIFE REFUGE

DECEMBER 10, 1987
FEBRUARY 17, 1988

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FUTURE MANAGEMENT OF THE ARCTIC NATIONAL WILDLIFE REFUGE

THURSDAY, DECEMBER 10, 1987

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:00 p.m., in room 406, Dirksen Senate Office Building, Hon. George J. Mitchell (chairman of the subcommittee) presiding.

Present: Senators Mitchell, Chafee, Stafford, Durenberger, Lautenberg, Baucus, Breaux, and Graham.

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator MITCHELL. Good afternoon, ladies and gentlemen. The Subcommittee on Environmental Protection convenes today to consider the future management of the Arctic National Wildlife Refuge's one and a half million acres coastal plain and also to consider S. 1804, introduced by Senators Roth, Bradley, and Chafee, which would designate that portion of the refuge as wilderness.

I have an opening statement that I will place in the record. After this hearing had been scheduled—indeed, within the last 24 hours—a meeting between Secretary of State Shultz and all Senators has been scheduled for 3:30. I know that all the members of the subcommittee will want to attend because it involves the current summit and negotiations underway. So this hearing will run from now until 3:30. I'm, therefore, going to enforce the time rules of the committee more strictly than has occurred in the past, and I'm going to ask all witnesses to stay within those time limits. This is an important subject, and we want to hear from the witnesses. We want to leave some time for questions if we can.

[Senator Mitchell's statement follows:]

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Good afternoon. The Subcommittee on Environmental Protection convenes today to consider the future management of the Arctic National Wildlife Refuge's 1.5 million-acre coastal plain and S. 1804, introduced by Senators Roth, Bradley and Chafee, which would designate that portion of the refuge as wilderness.

Section 1002 of the Alaska National Interest Lands Conservation Act of 1980 required the Secretary of the Interior to study the natural resources of the Arctic Refuge's coastal plain and evaluate the area's oil and gas potential.

In July of this year the results of that study and evaluation along with recommendations for future management of the Arctic Refuge's coastal plain were transmitted formally by the Secretary to the Environment and Public Works Committee.

The preferred alternative selected by Interior Secretary Hodel is to make the entire 1.5 million-acre Arctic Refuge coastal plain available for oil and gas leasing.

The recommendation is based on the report's conclusions that area has the potential to provide enormous quantities of domestic oil and that exploration, development, and production can be conducted in an environmentally sound manner.

One of my main purposes this afternoon will be to discuss the Interior Department report and recommendations.

In particular, I have questions about a number of key aspects of the report:

Have the impacts to fisheries and wildlife from oil exploration, development and production been considered fully?

Are the report and the recommended development consistent with our international treaty obligations with respect to caribou, polar bears, and migratory birds?

Have the effects on air and water quality and the supply of fresh water resources been assessed thoroughly?

Have the effects of oil and gas development in the Arctic Refuge's coastal plain been examined critically in terms of the cumulative impacts of such development in the Arctic region?

Has a complete review of the coastal plain's wilderness and recreational potential been conducted and assessed fairly?

How much consideration has been given to alternatives to full leasing of the coastal plain's oil and gas resources at this time?

How serious an attempt was made to evaluate alternatives that would defer development of the coastal plain pending pursuit of other possibilities such as development of other potential sources of oil, development of other sources of energy, and improved energy conservation?

I believe that in passing title X of the Alaska Lands Act, the Congress sought to have these questions addressed as thoroughly and definitively as possible before it made any decisions with respect to the future management of the Arctic Refuge's coastal plain.

I hope today that we can begin to evaluate the adequacy of the Interior Department report in addressing the impacts that would result from oil and gas development and the alternatives to such development.

One such alternative that will be considered explicitly this afternoon is complete protection of the Arctic Refuge's 1.5 million-acre coastal plain from oil exploration, development and production by designating it as a component of the National Wilderness Preservation System.

Our witnesses are well-suited, and certainly thoroughly-practiced, at addressing the issues involved in the future management of the Arctic Refuge's coastal plain, and I welcome them and look forward to their testimony.

Senator MITCHELL. Senators Roth and Murkowski are listed as the first witnesses. They are not present, so we'll begin with Mr. William P. Horn, Mr. Robie Russell, and Ms. Margaret Moran, who make up the first panel.

Good afternoon, Ms. Moran and gentlemen. Under the rules of the committee, all witnesses' statements in writing are placed in the record in full for review by the members of the committee. We ask in your oral presentations that you limit your remarks to 5 minutes, hitting the highlights, those important points you want to make. To assist you in that regard, the panel lights before me indicate when your time is up. Green means you're fine, keep talking. Orange means you'd better start thinking about wrapping up. When the red light comes on, it means stop.

We welcome you all. This is a very important issue not only to the Department or to the FPA or the people of Alaska, but all Americans. So we look forward very much to hearing your testimony. We'll begin with Mr. Horn.

STATEMENT OF WILLIAM P. HORN, ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR, WASHINGTON, DC

Mr. HORN. Thank you, Mr. Chairman.

I appreciate the opportunity to appear before the committee to present the Department's views on the Alaska National Wildlife Refuge, and in particular some of the findings from the section 1002 report that we provided pursuant to congressional directive in the Alaska Lands Act enacted in 1980. I will skip over most of the basics.

ANWR is a major unit of the refuge system located in northeast Alaska. We've spent five and a half years conducting the studies, both biological and geological, that culminated in the report that was released by the Secretary last spring.

Focusing first on the oil and gas side of the equation, the seismic work that we conducted mapped a minimum of 26 structures underlaying the one-and-a-half-million-acre coastal plain. Many of these structures are physically large—indeed, larger than the nearby structure at Prudhoe Bay, which holds the largest oil field in North America. Beyond those 26 structures that we identified, there are numerous other areas that have the potential for having stratigraphic traps and other types of subsurface structures capable of holding commercial quantities of oil and gas.

The geologists in the Department rate the 1002 area as the most outstanding oil and gas area in North America. This high rating is based on the size of the structures, the sediment depths that have been mapped, the presence of source rock, and the fact that it lies between the Prudhoe Bay area on the west and the Canadian producing provinces of the Mackenzie Delta on the east. Consequently, our geologists have come to the conclusion that this area offers the best opportunity to add significantly to the U.S. domestic reserve base. Indeed, the report estimates that there is a mean recoverable amount of oil in the 1002 area of 3.2 billion barrels.

To give you just some idea of how important and what a quantity that is, in 1982 at the peak of domestic drilling, it took 1,400 new discoveries to add reserves of 650 million barrels to the domestic base. Here we have an opportunity in one area to find multiple billions of barrels.

Of course, our studies also focused extensively on the environmental side of the equation. In addition to the continuing work that's been going on since this unit was added to the National Wildlife Refuge System in 1960, we conducted 55 separate wildlife related studies during the course of the past 6 years. Based on those studies and the 20-year experience at Prudhoe Bay, we are persuaded that the facts clearly demonstrate that the wildlife values of the 1002 area, particularly the caribou values, will not be adversely affected by a prudent and orderly oil and gas leasing and exploration program.

The last item I would like to touch on would be the relationship of opening ANWR to our domestic energy policy. One of the critical elements of a comprehensive energy policy is adding to our domestic oil reserves. Without significant additions, U.S. oil output will continue to be reduced, our concurrent dependence on OPEC will

continue to grow, and the continued hemorrhage of dollars to pay for that imported oil will also continue.

Conservation is important, but it cannot do the job by itself. Just a quick review of the numbers tells the case most persuasively. In 1973, at the beginning of our first oil embargo, the United States was consuming approximately 17 million barrels daily, producing approximately 11 million barrels daily, and importing, therefore, 6 million barrels daily to make up the difference. We have been able to reduce that amount, through a combination of market forces and programs and alterations in the economy. We now consume 16 million barrels a day, and domestic oil production has fallen to 10 million barrels a day. It is going to continue to fall because Prudhoe Bay, which is a full 20 percent of our output, is going to begin to decline next year. We are still importing the same 6 million barrels a day.

Even if we were to engage in the most Draconian forms of energy conservation and further drive that demand down, let's say, into the 12- to 14-million-barrel-a-day range by the turn of the century, without additions to our reserve base, domestic output is estimated to slide into the 6- to 7-million-barrel-per-day range, which would have us importing somewhere between 6 and 8 million barrels daily. That's not only greater raw amounts of oil than we're importing at this time, but that's a greater percentage. Indeed, it would make us 50 percent dependent, and it would cost us more at that point.

Addition to the domestic reserve base is a critical element of an energy policy, and this area offers our most outstanding chance to make a significant contribution to that reserve base. That's the reason we're recommending that it be opened, coupled with the fact that we think environmentally it can be pursued in a very sound fashion and protect the wildlife values that are so important in this refuge.

Thank you.

Senator MITCHELL. Thank you, Mr. Horn.

Before proceeding to the next witness, Senator Roth has come in, and I know the other panelists will agree with my request that he be permitted to testify now. Senator Roth has a very busy schedule, he has to go to another meeting. The rest of you can stay there. Why don't you just let him take Mr. Horn's seat, and we'll hear from Senator Roth and then we'll resume the panel.

Welcome, Senator. We look forward to hearing from you.

STATEMENT OF HON. WILLIAM V. ROTH, JR., U.S. SENATOR FROM THE STATE OF DELAWARE

Senator ROTH. Thank you, Mr. Chairman.

First, I want to say how much I appreciate the opportunity to attend this hearing and to talk about my legislation, S. 1804, that would declare the 1.5 million acre coastal plain of Alaska's Arctic National Wildlife Refuge a wilderness area. Mr. Chairman, it's an important issue.

When we introduced this legislation last October, it was our feeling that the coastal plain is a unique and fragile ecosystem of such significance that we need to do our utmost to protect for ourselves,

our children, and our children's children; that it should not be open for leasing. Quite frankly, I continue to feel very strongly this way.

As this committee addresses the issues that surround this legislation, it is indeed embarking on a very significant challenge. I call it significant because the lines of distinction between what is good, better, and best for the American people are blurred by deep convictions and strong emotions from all parties concerned.

Personally I stand ready to assist your committee in meeting this challenge head on. My willingness is borne by my belief that saving this land for our future generations is extremely important. There are few things of real value that we can leave our posterity with the confidence that they will endure beyond our lifetime and throughout theirs. Undisturbed land is one of these.

We become more certain about the importance of wilderness areas as time passes on, realizing that once the land is stripped, it's impossible to return it to the way it was. Now in my years in the Congress I have come to accept the need for development of our natural resources in order to strengthen possibilities or opportunities for our civilization. However, our resources are finite. They are limited, and the numbers of those who have yet to come are not. Consequently, without wise use and protection of these limited resources, civilization as we've known it would not be able to exist.

With the passing of time, it's become a compromise between one generation and the next. What are we willing to leave? What will they be willing to leave? The answers are critical because on them hangs the quality of life of one generation and the next, and then the next.

As one of the world's most extraordinary natural resources, frontiers, we must take pride that the coastal plain is ours. With that pride, we must assume the responsibility for its care and management. If we take this duty seriously, we will in no way be able to justify the stripping and mining and drilling that has been proposed for a temporary source of oil. We will not be able to justify it because the facts are that if we open the coastal plain to the oil industry, the frontier will be lost.

Instead of the majestic beauty of the wilderness plain and the natural habitat for wildlife, we will have land laced with 380 miles of roads for heavy equipment, criss-crossed with 100 miles of main pipeline collector lines. We will have a land where seven large production facilities, four smaller ones, two ports with marine and saltwater treatment facilities, four airfields scar the forests and tundra—we'd have a land littered with boom communities, a land where concerns abound about adequate water supplies and drilling, concerns about the thousands of tons of gravel that would have to be mined and transported on muddy roads that will cut across this virgin territory, and concerns about the crystal-clear streams that will be polluted—all to get at that small, black pool beneath the north slope.

Mr. Chairman, I believe that the 80 percent change, or whatever the estimate, of not finding oil and the added fact that if oil is found, it would only be enough to last for a few months demonstrate that we must leave the beauty and the natural resources of the frontier to the wildlife and to future generations.

What price are we willing to pay for extracting the oil out of there? If the refuge is lost, it's lost forever and the Nation as a whole will be shortchanged, and we will not have fulfilled our responsibility for the stewardship of our natural resources.

To meet our Nation's energy requirements, we must continue to proceed on two fronts. We must continue to reduce the demand for energy through conservation. As a matter of fact, two years ago the Department of Energy reported that conservation had done more than any other source to improve the U.S. energy situation.

We must also increase domestic supplies of energy through alternate sources that will result in long-term solutions. And I emphasize that the find of oil in ANWR would not be a long-term solution.

The third reason for protecting this area, Mr. Chairman, is that this pristine, untouched ecosystem spreads out over both the United States and Canada. It's a shared resource containing one of the last unspoiled remnants of Arctic beauty and wealth that remains. Because it is shared, it provides us with an outstanding opportunity to work with the Canadians in legislatively designating this area as an international wilderness area. The Canadians have done much to protect their northern resources that are shared with the United States. This action will significantly strengthen the recognition of the international importance of these shared lands. It's the opportunity of a lifetime that we must not let slip away.

Recently your committee received the Canadian comments to the Interior Department's environmental impact statement on the coastal plain. This comment paper reiterates something that I've been saying all along—that natural resources know no borders. When this area is declared an international wilderness area, we will do much to insure the future of many of the shared resources that this area contains.

Somehow, Mr. Chairman, I find it ironic that while we in Congress encourage other foreign countries to save their lands for future generations—as a matter of fact, we even give them funds to set up parks to save specific ecosystems—we have a difficult time doing this with our own natural resources and heritage when they contain international dimensions.

My message today is clear: Congress must act responsibly as we consider the future of the coastal plain. We must reaffirm our decision to save this area and declare it an international wilderness area.

Senator MITCHELL. Thank you very much, Senator Roth, for your statement.

Are there any questions of Senator Roth by any member of the committee?

[No response.]

If not, we are very grateful to you and we thank you for your statement.

I would also like to place in the record at this time a statement by Senator Bradley who is a cosponsor of the legislation with Senator Roth.

[Senator Bradley's statement follows:]

STATEMENT OF HON. BILL BRADLEY, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Mr. Chairman, I congratulate you on scheduling this hearing. Your willingness to focus so quickly on this crucial environmental issue underscores your own interest and commitment. The legislation sponsored by Senator Roth, myself, and others has a simple goal: to preserve the Arctic National Wildlife Refuge intact, as wilderness, for this and future generations.

The Arctic Refuge is a unique area. The Interior Department clearly recognized this in its draft report on the region when it stated, "The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the various arctic ecosystems in North America." Its remote situation and forbidding climate have made it all but inaccessible to human visitors. This is appropriate, as ANWR exists foremost for its own inhabitants. This is an area of fantastic ecological importance. At stake is far more than the fabled Porcupine caribou herd that has received so much attention. The coastal plain is also vital to polar bears, grizzly bears, wolverines, and muskoxen, the survivors of the Ice Age. Millions of swans, snow geese, northern pintail and other water fowl spend their summers on this stretch of the Arctic coast.

I've heard repeatedly that oil development and wildlife can be compatible. The thriving caribou population at Prudhoe is an often-noted example of this compatibility. However, wilderness is a quality that transcends the particular habitat and statistics of any species of flora or fauna. Wilderness is the essence of ANWR and wilderness is incompatible with development. Here's what the Department of Interior feels full development would bring to this roughly 100 by 25 mile area:

100 miles of main pipeline and numerous collector lines;
380 miles of roads;
seven large production facilities and four smaller ones;
four airfields;
two ports with salt water treatment facilities;
40 to 50 million cubic yards of gravel to be dug up and moved;
reserve pits for toxic drilling muds, disposal wells, etc.

A single exploratory well would demand 15 million gallons of water—in an area properly described as desert. The question of land reclamation has yet to be addressed at Prudhoe Bay. Whether or not the land can be reclaimed will probably be open to debate for at least another lifetime.

Mr. Chairman, we've heard about the vastness of the Arctic Refuge. Don't be fooled. Development will fundamentally and irreversibly alter the character of this unique region.

To what end do we pursue this goal of oil development in a now pristine environment? The Administration states its case clearly in the dialect of energy security. Frankly, I question their arguments and their sincerity. During the Senate debate of the Trade Bill, we debated at length the concept of energy security and the policies that promote this goal. My opinion is well-known. Arguments of energy security cannot be distilled to a discussion of "good" U.S. oil versus "bad" foreign oil. Oil markets are worldwide. When we abandoned price controls on oil, we pledged this nation to abide by a world market price. Developing ANWR, with its one-in-five chance of adding another two hundred days of U.S. oil consumption to the reserve base, is neither the only way nor even best way to promote national security. T. Boone Pickens, a man I don't usually quote, cut through much of the energy security smokescreen when he said, "I just don't understand why we're rushing to drill our last remaining oil reserves in the country. At $18 a barrel, foreign oil is cheap. We should take all the oil the foreign producers have. Run our economy on it and fill up our strategic oil storage."

This Administration is in a rush now to sell off the rights to drill in ANWR, for "bonus" bids of some $2–4 billion. Yet they were unable to shift priorities and fund increased purchases of oil for the Strategic Petroleum Reserve when oil prices sank last year to below $10 per barrel.

In the Energy Committee, there are attempts being made to correct and improve legislation which would allow oil leasing throughout the Refuge. This has been the focus of the recent hearings. Unfortunately, both Administration and industry witnesses seem unwilling to moderate their goals or admit to any value or need for legislative stipulations. I have listened to this debate closely and reached a similar conclusion: compromise cannot improve a fundamentally flawed action.

Mr. Chairman, ANWR is remote. It is unknown to most of us. Yet it is home to thousands of varieties of wildlife, as well as an indigeneous population which depends on this wildlife for its subsistence. This home deserves to be treated with respect and protected.

Senator MITCHELL. Thank you very much, Senator. I know you have a busy schedule and have other commitments to make.

Senator ROTH. Thank you, Mr. Chairman.

Senator MITCHELL. Right.

I'd like to ask the members present if any of them would like to place an opening statement in the record. As you know, Secretary Shultz is briefing Members of the Senate at 3:30 and we're going to attempt to conclude the hearing by then.

Senator Baucus.

Senator BAUCUS. I have no statement.

Senator MITCHELL. All right. Senator Stafford.

Senator STAFFORD. No statement.

Senator MITCHELL. Senator Breaux.

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Senator BREAUX. I'll put it in the record. Thank you, Mr. Chairman.

[Senator Breaux's statement follows:]

OPENING STATEMENT OF HON. JOHN B. BREAUX, U.S. SENATOR FROM THE STATE OF LOUISIANA

Mr. Chairman, I am pleased that today we are beginning action in the Environment and Public Works Committee on the issue of potential oil and gas exploration and development within the coastal plain of the Arctic National Wildlife Refuge. This is an issue in which I have had a longstanding interest. As a very active participant in the debates and discussions leading up to enactment of the Alaska National Interest Lands Conservation Act (ANILCA) in 1980 during my service in the House of Representatives, I have been following with interest the progress of the study and report dictated by Section 1002 of ANILCA. I look forward to hearing from Assistant Secretary Horn on this subject.

Over the past decade and more we have learned a tremendous amount about the proper conduct of oil and gas development activities in the harsh yet fragile environment of the Arctic. We have also learned painful lessons about the price we pay as a Nation for our dependence on foreign energy supplies, a dependence which has continued to grow in recent years. The coastal plain of the Arctic National Wildlife Refuge is widely recognized as one of the most promising remaining areas in the U.S. for discovery of significant oil and gas reserves. Any development of these resources, if it is determined that such exist, would be a lengthy and expensive process. And given the sensitive nature of the environment in this area, it is not a process we would wish to risk hurrying in the event of a further national energy emergency. The 19 million acre Arctic Refuge, of which about 8 million acres is currently designated as wilderness, is an area I have been privileged to visit on a couple of occasions, and is certainly an area deserving of careful stewardship. Yet I am convinced that with strict and proper safeguards for wildlife and the environment, and with a proper mix of areas suitable for further development and protection of critical or especially sensitive habitats, oil and gas development and protection of the values of the Arctic National Wildlife Refuge can be compatible.

I commend you, Mr. Chairman, for initiating this review of the ANWR issue. While I will certainly oppose S. 1804 in its current form, I look forward to working with members of the Committee in developing legislation to permit responsible development to go forward while ensuring that the Arctic National Wildlife Refuge continues to protect the significant wildlife and other resource values that exist in the region.

Senator MITCHELL. Senator Lautenberg.

Senator LAUTENBERG. No statement.

Senator MITCHELL. Senator Chafee.

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator CHAFEE. I have one I'll put in the record, Mr. Chairman.
Senator MITCHELL. All right, thank you.
[Senator Chafee's opening statement follows:]

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Mr. Chairman, I want to thank you for holding this hearing. This is a harried time of year but it is important for us to take the time to prepare our committee for what may be one of the most important environmental debates in quite a while—the debate over management of the Arctic National Wildlife Refuge (ANWR).

So far, most of the Senate action on this issue has been in the Energy Committee. I know that some of our colleagues were surprised to see Senator Roth's bill referred to this committee, but they should not have been surprised. Our jurisdiction over fish and wildlife matters, including the management of refuges, means we must be included in this debate.

Mr. Chairman, we have a number of experts with us today and I am anxious to hear them so I will make just a few points.

First, let's look at the numbers being bantied about here. I am a skeptic about all of these projections but, for arguments sake, let's take them at face value.

The report put out by the Interior Department says that under the "most likely economic case" ($33 per barrel in the year 2000 and 6 percent inflation), there is a 19 percent chance of finding economically recoverable oil somewhere in the 1.5 million acre coastal plain. Nineteen percent sounds pretty high until you look at it the other way. Namely, what are the odds against finding economically recoverable oil in this area? The odds are 4 to 5 against, an 81 percent probability that commercially recoverable oil does not exist in the coastal plain.

Let's look at some more numbers. Prudhoe Bay is believed to hold 9.6 billion barrels of recoverable oil. The coastal plain is said to have only a 5 percent chance of holding 9.2 billion barrels.

Assuming the 5 percent turns out to be 100 percent, how far will that take us in our fight for "energy independence"? It's a drop in the bucket.

Some of our witnesses will talk about the need for an overall energy policy and the benefits of energy conservation. I agree with them. That is where we should be looking to protect our "national security". It will be a sad day when we have to develop our pristine, natural ecosystems to remain a secure, free nation.

Should we tap into the geothermal power of Yellowstone's Old Faithful? Should we dam up the Colorado River for hydropower and lose part of the Grand Canyon? Of course not. So why should we be wreaking havoc on one of the last great untouched corners of the Earth in search of oil?

On the question of conservation. I see that the statements from two of our witnesses mention the benefits that would flow from changing the auto mileage standard for new cars from 26 miles to the gallon to 30 or 40 miles to the gallon.

I agree but wonder, why think small? Why only 30 or 40 miles per gallon? A recent report from the World Resources institute noted that the technology already exists to make a car that get 98 miles to the gallon. Now, 98 may be the outer limits but we can certainly make fleets that average 50 or 60 miles to the gallon. And we may have to! Not only for energy "national security" reasons but for international "global habitability" reasons.

Our wasteful use of fossil fuels is the single biggest cause of the greenhouse effect. If we don't get a handle on it soon, the problems of global climate change will make all arguments about the arctic refuge irrelevant.

One final point Mr. Chairman. This debate is not about the ability of man to develop oil reserves while minimizing harm to wildlife in the area. It is about man's ability to live in peace with nature. The question is not "will the caribou survive?" the question is whether we have enough respect for the wonders of nature to see a unique, fragile ecosystem and say "this we will leave as we found it".

Senator MITCHELL. I'd like, then, to call upon Senator Murkowski who is present, who is the next scheduled witness.

STATEMENT OF HON. FRANK H. MURKOWSKI, U.S. SENATOR FROM THE STATE OF ALASKA

Senator MURKOWSKI. Thank you, Mr. Chairman. I want to commend you and your colleagues for giving me an opportunity to testify today. I am no stranger to the committee, having previously served as a member of the Environment and Public Works Committee.

Obviously this issue is of crucial importance to my State of Alaska, and the question of the intent of this subcommittee with regard to these oversight hearings on the management of the Arctic National Wildlife Refuge, or ANWR, is critical.

As I reflect on the discussions that will take place today, Mr. Chairman, I can't help but recognize that there is a vast lack of knowledge about my State of Alaska, about ANWR, about the realities of distance. When I listen to my friend from Delaware, I'm always amazed at the impressions that one has. I don't know an awful lot about Delaware other than I think you can drive through it in about 20 minutes. Alaska, as the chairman knows, is about one-fifth the size of the United States and when we apply uniformity, oftentimes, there's a lack of recognition of the distances, the vastness of our State, our environmental commitment, the reality that, indeed, in the State of Alaska we have 56 million acres of wilderness. I offer that not to compare the State of Delaware, which has in its entire State 1.2 million acres, but to simply point out that there has been a dedicated commitment by Alaska, as a consequence of our awareness of the value of the ecology and the environment.

I think it's fair to point out that while Congress maintains an oversight responsibility, that there's very little notice as to what the State has done internally. We've got 104 million acres, Mr. Chairman, under statehood, but we saw fit to take a portion of that and make State parks out of it, over 3 million acres. Three million, a hundred and twenty-two thousand, four hundred and four acres have been made into State parks. We're very proud of that, and I bring this up, Mr. Chairman, to indicate the commitment to go beyond what the Federal Government has mandated in the 56 million acres and recognize what the State has done in 9 exquisite State parks that are paid for not by the Federal Government, but the people of Alaska and maintained, I would say, in a better state in spite of the fact that my friend, Bill Horn, may contradict that, than the Federal parks. So make no mistake about it, Mr. Chairman, there are efforts here to take the issue before this committee and take it totally out of perspective because of the reality of distance, the reality of size and magnitude.

As we refer to the total acreage of the State of Alaska, 375 million acres, and the recognition that we received 104 million under statehood and the native allocation, which is the only private ownership of land in the State of Alaska of any consequence, 44 million acres, compared with the Federal Government ownership of 227 million acres and the fact that the BLM manages 77 million acres, and there are 53 million acres in wildlife refuges and 48 million acres in national parks and monuments, and 23 million acres in national forests—again, the recognition that we have 56 million

acres in designated wilderness. These areas combine the size of many, many States, Mr. Chairman, and I reflect on this simply to try to put the matter into some reasonable perspective.

We talk about the pristine, untouched ecosystems, the reality that there is a highway in Canada called the Dempster Highway. It's been there for a long time. The reality that within ANWR we have a native village of Kaktovik. We've had radar sites. There is some activity.

The suggestion you're going to have boom communities in the Arctic of the nature described by my colleague from Delaware is obviously without foundation, as has been evidenced by the activity at Prudhoe Bay.

Mr. Chairman, the basis for the hearing on this bill, to designate the coastal plain of ANWR as a wilderness area, is obvious to everyone. I've just come from a House hearing, and if I seem to be a little concerned with the activities associated with the Congress today, it's because over in the House under a proposal by Congressman Mrazek to cancel the only two manufacturing plants that we have in Alaska, our two pulp mills in southeastern Alaska—he's got a bill that would cancel the timber contracts, put them out of business and not only lay off 3,000 employees in an area where there's only 70,000 residents, 70 million acres of land however, but to basically ignore the human frailties associated with mandating action that would cause our two only manufacturing plants to be shut down.

We come over here, Mr. Chairman, and we're faced with the issue of ANWR. We're faced with the reality that this committee has claimed jurisdiction. I personally feel rather strongly about this. I don't believe, as you know, Mr. Chairman, that this committee has any basis for holding hearings on the ANWR issue. I happen to believe that the referral of the Senate Bill 1804 to this committee was a referral done in error. I know there's a very ambitious staff associated with this committee, and I can obviously see their tracks as a consequence of this.

But be that as it may, as near as I can tell, this is the first wilderness bill affecting a national wildlife refuge to ever be referred to the Environment and Public Works Committee. In that regard, Mr. Chairman, I would ask at this time to insert for the record a November 18, 1987 letter from Senators Johnston and McClure to the Majority and Minority Leaders concerning the referral of S. 1804.

Senator MITCHELL. Without objection, that will be done.

[The letter referred to follows:]

J. BENNETT JOHNSTON, LOUISIANA, CHAIRMAN
DALE BUMPERS, ARKANSAS
WENDELL H. FORD, KENTUCKY
HOWARD M. METZENBAUM, OHIO
JOHN MELCHER, MONTANA
BILL BRADLEY, NEW JERSEY
JEFF BINGAMAN, NEW MEXICO
TIMOTHY E. WIRTH, COLORADO
WYCHE FOWLER, JR., GEORGIA
KENT CONRAD, NORTH DAKOTA
JAMES A. McCLURE, IDAHO
MARK O. HATFIELD, OREGON
LOWELL P. WEICKER, JR., CONNECTICUT
PETE V. DOMENICI, NEW MEXICO
MALCOLM WALLOP, WYOMING
FRANK H. MURKOWSKI, ALASKA
DON NICKLES, OKLAHOMA
CHIC HECHT, NEVADA
DANIEL J. EVANS, WASHINGTON
DARYL H. OWEN, STAFF DIRECTOR
D. MICHAEL HARVEY, CHIEF COUNSEL
FRANK M. CUSHING, STAFF DIRECTOR FOR THE MINORITY
GARY G. ELLSWORTH, CHIEF COUNSEL FOR THE MINORITY

United States Senate
COMMITTEE ON
ENERGY AND NATURAL RESOURCES
WASHINGTON, DC 20510-6150

November 18, 1987

The Honorable Robert C. Byrd
Majority Leader
United States Senate
Washington, D.C. 20510

Dear Robert:

We are writing to express our amazement and deep concern over the recent referral of S. 1804 to the Committee on Environment and Public Works.

S. 1804 would designate a portion of the Arctic National Wildlife Refuge as a component of the National Wilderness Preservation System. Referral to the Committee on Environment and Public Works is not consistent with the express provisions of Senate Rule XXV establishing the jurisdiction of the Committee on Energy and Natural Resources, nor is it consistent with previous referrals.

As far as we can determine, every bill that has ever been introduced designating all or a portion of a unit of the National Wildlife Refuge System as wilderness has been referred to the Energy and Natural Resources Committee or to its predecessor, the Committee on Interior and Insular Affairs. Thus, we were dumfounded by the referral of S. 1804.

The following background information will explain our view that the referral is clearly erroneous and that S. 1804 should be referred to our Committee.

The National Wilderness Preservation System was created by the Wilderness Act of 1964. All the bills leading up to enactment of that Act were considered by the Committee on Interior and Insular Affairs. There was no reference to "wilderness" in the Senate Rules regarding Committee jurisdiction.

One provision of the 1964 Act directed the Secretary of the Interior to review "every roadless area of five thousand contiguous acres or more in the national parks...and every such area of, and every roadless island within, the national wildlife refuges and game ranges..." and "report to the President his recommendation as to suitability or nonsuitability of each such area or island for preservation as wilderness." New areas can be added to the system only by an Act of Congress (16 U.S.C. 1132(c)). The Act also provides that "The inclusion of an area in the National Wilderness Preservation System notwithstanding, the area shall continue to be managed by the Department and agency having jurisdiction thereover immediately before its inclusion in the National Wilderness Preservation System unless otherwise provided by Act of Congress. No appropriation shall be available for...administration of the National Wilderness Preservation System as a separate unit...." (16 U.S.C. 1131(b))

As the review of roadless areas within wildlife refuges and game ranges (all units of the National Wildlife Refuge System) proceeded, numerous bills designating areas as part of the National Wilderness Preservation System were considered by Congress. All of them were referred to the Committee on Interior and Insular Affairs including, for example, over 40 bills in the 94th Congress each designating wilderness in a different wildlife refuge.

When the Temporary Select Committee to Study the Senate Committee System considered Committee reorganization in 1976, it proposed the creation of the Energy and Natural Resources Committee, and that it have jurisdiction over "wilderness areas." The Select Committee cited the source of the proposed new Committee's jurisdiction over wilderness areas (both designation and management) as "Defacto subjects from current bill referral practices." (S. Rep. No. 94-1395 at 51)

When the Rules Committee reported S. Res. 4 in January 1977, it retained the recommendation of the Select Committee that "wilderness areas" be under the jurisdiction of the Committee on Energy and Natural Resources. The Rules Committee did however, modify the Select Committee's recommendation with respect to wilderness by adding to the Agriculture, Nutrition, and Forestry Committee's jurisdiction "wilderness areas other than those created from the public domain." No reference to wilderness was added to the jurisdictional statement of the Committee on Environment and Public Works.

Prior to adoption of S. Res. 4, jurisdiction over "fisheries and wildlife" was in the Committee on Commerce. S. Res. 4 adopted the Select Committee's recommendation that "fisheries and wildlife" be moved to the Committe on Environment and Public Works. Before S. Res. 4, no wilderness bill was referred to the Commerce Committee. After S. Res. 4, no wilderness bill was referred to the Committee on Environment and Public Works. During that time, almost 80 wilderness area designations were enacted for over 60 refuges.

In sum, the referral of S. 1804 is the first and only time since the National Wilderness Preservation System was established more than 23 years ago, that a wilderness bill has been referred to the Committee with jurisdiction over "fisheries and wildlife." The referral is wrong, should be corrected and not repeated. We would appreciate your advice on how to prevent repetition of this mistake.

Sincerely,

James A. McClure
Ranking Minority
Member

J. Bennett Johnston
Chairman

cc: Alan Frumin, Parliamentarian
Sen. Burdick, Sen. Stafford, Sen. Mitchell, Sen. Chafee

Senator MURKOWSKI. I thank the Chair.

I wish to make it very clear that I'm submitting this letter for myself and not on behalf of Senators Bennett Johnston and Jim McClure.

In addition, the issue of oil and gas leasing on the coastal plain of ANWR versus designating the area as a wilderness is a land-use question. Public lands issues are and always have been within the exclusive jurisdiction of the Committee on Energy and Natural Resources. As a member of that committee, Mr. Chairman, and as a former member of this committee, I'm deeply disturbed by the apparent lack of regard for committee jurisdiction.

I have no illusions, Mr. Chairman, that the Committee on Environment and Public Works will give up jurisdiction on the ANWR issue. It's too hot a topic. But given that, I'm pleased to know that the distinguished Senator from Maine will be chairing the subcommittee conducting this hearing, and, Mr. Chairman, you're a former judge, and in that capacity you've developed an outstanding ability to weigh all the facts associated with a particular case before recommending a decision. I am confident that after weighing the facts and comparing the facts on the ANWR issue, you, too, will reach the same decision that I have—that it is, indeed, in the national interest to authorize oil and gas leasing on the coastal plain of ANWR.

For the benefit of the committee, let me run through a few quick facts. First, the proponents of the legislation S. 1804 claim that designating the coastal plain as a wilderness is necessary to ensure the survival of the Porcupine caribou herd. The claim ignores several well-documented facts. The Procupine caribou herd only occupies the coastal plain for approximately three to four weeks out of every year, and even then not every year, as indicated with the calving that occurred in Canada this year. To reach the coastal plain of ANWR, the caribou migrate across a significant portion of northern Canada. They cross the Dempster Highway on a couple of occasions. While they use the ANWR coastal plain for a portion of their calving, they also frequently calve in the Canadian coastal plain where the Canadians have already drilled some 80 oil wells, not found any oil, and set aside a portion of the area in a park.

Mr. Chairman, most important is the argument for a wilderness that ignores the experience of Prudhoe Bay. The Central Arctic caribou herd which inhabits the Prudhoe Bay area year around has grown from 3,500 animals in 1972 to over 16,000 today. This tremendous increase in population demonstrates that the caribou is extremely adaptable, that it can coexist with oil development in the Arctic, and there's no reason to believe that the experience will not be repeated in ANWR.

The fact is that the caribou are determined by the predators, Mr. Chairman. The biologist for the Alaskan Department of Fish and Game indicated yesterday that his studies indicated that the average pack of wolves takes two to three caribou a week, or approximately one moose if there's moose in abundance. This is just a harsh reality of the law of nature. The fact that we have some activity associated with Prudhoe Bay and, as a consequence, there is no hunting, there is no man predator, there is very little coverage

for the wolves—the wolves do not frequent Prudhoe Bay. As a consequence, the caribou herd has increased dramatically.

Wilderness proponents would also have us believe that authorizing oil and gas leasing on the coastal plain will destroy the last remaining Arctic ecosystem on earth. Once again, they ignore the facts. First, the area must be explored for oil and gas deposits. The oil industry has proven that exploratory drilling can be done in the winter with no impact—no impact, Mr. Chairman—on the land or the environment. If no commercial quantities of oil are found, that is the end of the process and there will be no footprint whatsoever. Those of my colleagues who went up there this last summer and observed the well at Kaktovik saw the actual footprint, and there isn't any.

On the other hand, Mr. Chairman, if commercial quantities of oil are found, the resulting footprint will be negligible, particularly in comparison to the size of the overall refuge. If the entire coastal plain is developed for production—a highly unlikely scenario, I might add—but if we took the entire area of the 1002, only 12,500 acres of land will be directly impacted. That is somewhat contradictory to the statements made by my friend from Delaware, who incidentally, I'm sorry to say, has never had an opportunity to visit ANWR.

Now this is made possible by the technology used by the industry in their current Arctic operations. Let me give you an example, Mr. Chairman. Some of you were up to the Endicott field, which has only been on line for a few weeks. That field is the tenth largest field in the United States. It produces 110,000 barrels of crude oil a day from two drill pads that utilize only 60 acres. Now when you hear a narrative about this tremendous area that's going to be impacted, the tremendous pipelines, the tremendous footprint, it's absolutely not true. It has no foundation. The technology is changing, and that's in the interest of ANWR.

It is helpful to put these figures in perspective. The Arctic National Wildlife Refuge contains 19 million acres, Mr. Chairman. Of a total of that, 8 million acres is designated in perpetuity as a wilderness. This leaves another 8 million acres in refuge, including 450,000 acres of the coastal plain. The million and a half acres out of the 18 million acres is what we're talking about under consideration for leasing. This is the so-called 1002 area, part of the acreage in the refuge which is not wilderness. It is on that 1.5 million acres that we're talking about allowing leasing or potentially, if we utilize the entire 1.5 million acres, the leases are purchased, the development takes place, there will be 12,500 acres under full development. Of course, that will never happen because you just don't find oil every place you look.

The other question is: How much wilderness is enough? Of the 19 million acres in the refuge, 2 million acres are in the coastal plain between the Brooks range mountains and the Beaufort Sea. Nearly 25 percent of the coastal plain, or 450,000 acres, has already been designated as a wilderness. The remaining million and a half acres has been identified as the most promising oil and gas prospect in North America, Mr. Chairman. It is this prospect that this bill, S. 1804, would add to the 56 million acres of wilderness already in Alaska. One has to ask, Are we lacking in wilderness that we need

to designate this area as well or are we so rich in energy reserves that we can afford to lock up this area? The answer is obvious, Mr. Chairman. As I've indicated, there is activity and has been activity in the coastal plain previously.

Finally, Mr. Chairman, I must express a certain amount of frustration with my colleagues who sponsored this legislation. It's interesting to note that virtually all of the co-sponsors of the bill are from the Northeast portion of the United States. It's also interesting to reflect that the Northeast is the area which relies most heavily on imported oil, and many of the same Members who have designated ANWR, our most promising domestic prospect for oil and gas, as a wilderness, they also oppose many other measures designated to enhance our energy national security.

I beg you, Mr. Chairman—I don't think you can have it both ways. If they want to have this way, then they should be prepared to accept the gas lines that we had not so many years ago which we can all recall. Let us not forget we have an energy crisis in this country although a few people fail to realize it.

I find it extraordinary, Mr. Chairman, that there are proposals before this body to close the exploration which would authorize leasing of ANWR—extraordinary when you think about it, Mr. Chairman. We have 15,000 servicemen in the Persian Gulf which are protecting energy resources, the free flow of oil. It is evident that this area contains 70 percent of the non-communist world's proven oil supplies. These Americans are prepared to make the ultimate sacrifice, Mr. Chairman. That ultimate sacrifice is to lay down their lives, if necessary, to keep the flow of oil in the Persian Gulf, to keep the sea lanes open for energy and commerce; that the citizens of the Northeast corridor and the rest of the United States can depend on the free flow of oil.

Yet this bill of the Senator from Delaware would close that—an extraordinary contradiction. At the same time the OPEC nations have devised an equilibrium in oil prices and oil production that is destined to keep their oil dollars flowing while stimulating consumption and depressing our ability to produce oil from marginal fields. Make no mistake about it, Mr. Chairman, they have hit on a magic formula—the price range is now $18 to $21. They can make a very, very substantial return because their operating costs are the lowest in the world. So what happens to us? We become more and more dependent on imports. In order to qualify and justify exploration in pioneering fields, we need a price structure of $28 to $31. So what's happening? We're becoming more and more dependent on imported oil.

I would suggest to you, Mr. Chairman, what responsibility does this committee, the Committee on Environment and Public Works, have to consider these realities?

While this is happening our trade figures show that oil imports have now become the second largest source of our growing trade imbalance, second only to imported automobiles. Last year alone, crude oil imports have increased by nearly 14 percent while domestic production dropped by over 5 percent. So it's everybody's problem, Mr. Chairman.

We cannot control prices, and low oil prices have dealt the U.S. oil industry a severe blow. Drilling activity has dropped from over

70,000 well completions per year to 37,000. The basic infrastructure of the U.S. industry, including skilled personnel, is shrinking. We continue to have the Iran-Iraq war in the Gulf. Now these factors spell crisis. Yet there are those in Congress who don't even want us to even learn if there are oil and gas reserves in the 1002 area. To lock away the coastal plain of ANWR now without knowing what's there, I suggest to you, Mr. Chairman, is irresponsible.

I'd like to remind the committee of the Senate vote several years ago that cleared the way for the Trans-Alaska Pipeline to be built. That measure, Mr. Chairman, passed the U.S. Senate by one vote. The Vice President broke the tie. There's no question, Mr. Chairman, that was the authorization that allowed the Trans-Alaska Pipeline to be built. Without that pipeline, this country would be unable to use the billions of barrels of oil that have come out of Prudhoe Bay. Today that constitutes nearly 25 percent of the domestic supply of oil produced in this country.

Now the arguments that were used then are the same arguments that are being used today: what effect is it going to have on the Arctic, on the environment, on the ecology? What effect is it going to have when you put a hot line in permafrost? Is it going to sink to China? What effect is it going to have on the caribou? We've seen what's happened to the Central Arctic herd? It's gone from 3,200 to 16,000. These are the same arguments that we're using again today, Mr. Chairman, and I just find it extraordinary that we are blind to realities of past experience and incapable to act responsibly in the energy interests of our own country as well as our strategic interests. One can only ask, Mr. Chairman, are we again destined to be held hostage by the Mideast oil sheiks or can we learn from our previous experience?

We've had an extraordinary experience in Prudhoe Bay. The only difference now is we have the technology to better address, indeed, the potential development from the ANWR area as a consequence of the technology that has occurred. Speaking as one of the Senators from the State of Alaska, I can tell you with pride that the State of Alaska, from the standpoint of its expertise and oversight in managing the environmental aspects associated with drilling is absolutely second to none in the United States.

Every time I get on my bicycle and ride along the Potomac River and reflect on the filth and degradation that has occurred and wonder why there is so much effort to move out of areas that need immediate attention to areas where there is a tremendous capability and expertise to manage our affairs and take a second seat to no one—I just find it very disturbing.

But I don't want to dwell on that, Mr. Chairman. I think I've made my position very clear. I thank you for the opportunity to testify. I'd be happy to answer any questions as appropriate.

Senator MITCHELL. Thank you, Senator Murkowski, for a very forceful statement of your position.

At your request, we've placed in the record the letter from Senators Johnston and McClure to the Majority and Minority Leaders dated November 18, 1987 regarding committee jurisdiction. I'd like to place in the record a letter dated December 4, 1987 from myself to Senator Johnston. I subsequently discussed it with him and responded to that letter. I think it would be good to have both. I'd be

pleased to provide you with a copy, and any other members of the committee at the earliest possible time.

[The letter referred to follows:]

QUENTIN N. BURDICK, NORTH DAKOTA, CHAIRMAN
DANIEL PATRICK MOYNIHAN, NEW YORK
GEORGE J. MITCHELL, MAINE
MAX BAUCUS, MONTANA
FRANK R. LAUTENBERG, NEW JERSEY
JOHN B. BREAUX, LOUISIANA
BARBARA A. MIKULSKI, MARYLAND
HARRY REID, NEVADA
BOB GRAHAM, FLORIDA
ROBERT T. STAFFORD, VERMONT
JOHN H. CHAFEE, RHODE ISLAND
ALAN K. SIMPSON, WYOMING
STEVE SYMMS, IDAHO
DAVE DURENBERGER, MINNESOTA
JOHN W. WARNER, VIRGINIA
LARRY PRESSLER, SOUTH DAKOTA
PETER D. PROWITT, STAFF DIRECTOR
BAILEY GUARD, MINORITY STAFF DIRECTOR

United States Senate
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
WASHINGTON, DC 20510-6175

December 4, 1987

The Honorable J. Bennett Johnston
United States Senate
Washington, D.C. 20510

Dear Bennett:

I am writing to follow up our discussion about the jurisdiction of our respective Committees concerning the management of the Arctic National Wildlife Refuge.

The Subcommittee on Environmental Protection of the Committee on Environment and Public Works is scheduled to conduct a hearing on this subject on Thursday, December 10th at 2 p.m. The specific purpose of the hearing is to consider the future management of the Arctic National Wildlife Refuge's coastal plain and S. 1804, a bill to amend to the Refuge Administration Act to designate that portion of the refuge as wilderness.

The Committee on Environment and Public Works has a longstanding jurisdictional interest in the management of units within the National Wildlife Refuge System, including the Arctic National Wildlife Refuge. As you know, Senators Burdick and Stafford wrote to Senators Byrd and Dole on May 5 of this year expressing that interest and seeking assistance in securing referral to the Committee of any legislation that would affect the management of the Arctic Refuge.

The Environment and Public Works Committee has jurisdiction and expertise in the programs of the U.S. Fish and Wildlife Service and the management of fish and wildlife resources (S. Rep. No. 95-2 at 12 and 31). The single largest component of the U.S. Fish and Wildlife Service is the National Wildlife Refuge System. Approximately one third of the U.S. Fish and Wildlife Service's annual program expenditures are allocated for the management of units of the National Wildlife Refuge System, including the Arctic National Wildlife Refuge.

Additionally, units of the National Wildlife Refuge System, including Arctic National Wildlife Refuge, are managed by the U.S. Fish and Wildlife Service under the National Wildlife Refuge System Administration Act of 1966 (P.L. 89-669). This Act restricts the uses of refuge areas to those that the U.S. Fish and Wildlife Service determines to be compatible with the major purposes for which a refuge was established. The Act is within the jurisdiction of the Environment and Public Works Committee.

S. 1804 amends the application of the Refuge Administration Act with respect to the management of one unit of the National Wildlife Refuge System, the coastal plain of Arctic National Wildlife Refuge. The referral of the bill to the Environment and Public Works Committee properly recognized that amendments to this Act fall within the Committee's jurisdiction. The legislation presents one option for U.S. Fish and Wildlife Service management of the area. The hearing before the Subcommittee on Environmental Protection will consider this option of complete protection and others in the future management of this important element of the National Wildlife Refuge System.

Other laws administered by the U.S. Fish and Wildlife Service that address the management of Arctic National Wildlife Refuge and other units of the National Wildlife Refuge System include, but are not limited to, the Migratory Bird Treaty Act, the Migratory Bird Conservation Act, the Fish and Wildlife Act of 1956, the Refuge Recreation Act, and the Refuge Revenue Sharing Act. Each of these statutes also is within the exclusive jurisdiction of the Environment and Public Works Committee.

Finally, with respect to the more general question of Committee jurisdiction over the future management of the 1.5 million-acre coastal plain of the Arctic National Wildlife Refuge, I note that the communication from the Secretary of the Interior transmitting, pursuant to Title X of the Alaska National Interest Lands Conservation Act, the report and recommendations on this matter was referred solely to the Committee on Environment and Public Works on July 8, 1987. Moreover, concurrent resolutions from the Legislatures of the States of South Carolina and Louisiana also were referred solely to the Environment and Public Works Committee.

Bennett, I know that you appreciate the murkiness that exists in matters of Committee jurisdiction. S. 1217, for example, addresses the management of the Arctic National Wildlife Refuge in general and the management and protection of the refuge's fish and wildlife in particular. Yet the legislation was drafted as an amendment to the Mineral Leasing Act of 1920 and was referred to the Committee on Energy and Natural Resources notwithstanding the considerations laid out above.

Consequently, jurisdiction over the future management of the Arctic National Wildlife Refuge's coastal plain is shared by the Committee on Environment and Public Works and Committee on Energy and Natural Resources. I hope, therefore, that we and the other Members of the Committees will cooperate to the extent possible in the consideration of any legislation on this subject.

Sincerely,

GJM

GEORGE J. MITCHELL

Senator MITCHELL. Do any members of the committee have any questions of Senator Murkowski? Senator Stafford.

Senator STAFFORD. Mr. Chairman, thank you. I'll be brief.

I agree with you, Mr. Chairman, that was a very forceful presentation of the picture as the Senator from Alaska sees it. My very brief question will begin with: if you know, Senator, what is the rate of chance of the discovery of oil in the ANWR area?

Senator MURKOWSKI. There's a certain formula that's applicable. The chances are higher in the ANWR area than any other identifiable area within North America from the standpoint of U.S. holdings. What that means can be interpreted in different ways. Let's say it has the highest potential.

It's not good enough to find oil in Alaska, Mr. Chairman, or Senator Stafford; you've got to find a lot because the economics simply mandate that you have substantial reserves there. That's why Prudhoe Bay was developed.

Senator STAFFORD. I heard the quoted figure that the chance was rated at about 19 or 20 percent.

Senator MURKOWSKI. That's correct.

Senator STAFFORD. Is that about on the mark?

Senator MURKOWSKI. I think the figure is 19.

Senator STAFFORD. Then you pointed out in your testimony that in the general area of the ANWR coastal plain there is already an Arctic National Wildlife Refuge which is wilderness of some 8 million acres.

Senator MURKOWSKI. That's correct.

Senator STAFFORD. And then the coastal plain is about 1.5 million acres, and I note that at Kaktovik, at Barter Island, there is also a fairly significant acreage that belongs to, if I pronounce it right, the Inupiat Indians? Am I correct in that?

Senator MURKOWSKI. That's within the Arctic Slope Regional Corporation.

Senator STAFFORD. And that there's already been an exploratory well driven there, I believe.

Senator MURKOWSKI. That is correct.

Senator STAFFORD. And that's been capped and nobody, I guess, knows what was discovered?

Senator MURKOWSKI. That's correct.

Senator STAFFORD. Under existing law, is it possible to go ahead with exploratory drilling in the ANWR area?

Senator MURKOWSKI. I believe that there was an authorization for two or three wells, but there's no provision for taking the oil out, if indeed the oil is found. Unless Congress authorizes the opening of ANWR, why, there would be no authorization to—there would be no incentive because you would have no assurance you would be able to move the oil out.

Senator STAFFORD. You wouldn't have any idea how many acres are in the Eskimo refuge or area where they have drilled?

Senator MURKOWSKI. I am sure that that would be supplied for the record by any number of the forthcoming witnesses. I'm told it's 92,000, and I would stand by that.

Senator STAFFORD. Ninety-two thousand acres? Thank you.

Thank you, Mr. Chairman.

Senator MITCHELL. Are there any other questions of Senator Murkowski?

Senator Breaux.

Senator BREAUX. While it's good to hear recommendations from people nationwide, I think it's even more important to hear recommendations from the people in the area. I note that the two Senators and the Congressman apparently recommend that we consider some exploratory activity in that area. How do the people from Alaska feel about it?

Senator MURKOWSKI. I appreciate your asking that, Senator. The people in Alaska wholeheartedly support opening ANWR for exploration. That's really what we're asking for. Usually, as you know from Louisiana, when you look for oil, you usually don't find it. To suggest that it's in our national interest to keep this area closed in perpetuity at a time when we are becoming more and more dependent on imports as well as the realities associated with the economic vitality of our State, and the fact that if indeed oil were found in a sufficient quantities to warrant an extension of a pipeline to the existing Trans-Alaska pipeline, it would mean substantial benefits for our State and the economy and the lifestyle of our people.

Senator BREAUX. Thank you.

Senator MITCHELL. Thank you, Senator Breaux.

Thank you very much, Senator Murkowski.

Senator MURKOWSKI. Thank you very much, Mr. Chairman. Please excuse me.

Senator MITCHELL. Mr. Horn, if you would return and while you are doing so, I'd ask if Senator Durenberger, who has joined us, cares to place an opening statement in the record.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator DURENBERGER. I would, Mr. Chairman. I thank you.

Senator MITCHELL. Thank you. That will be done.

[Senator Durenberger's statement follows:]

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Thank you Mr. Chairman, for this opportunity to hear the issues on the Arctic Wilderness bill, S. 1804. As you know I support S. 1804 along with Senators Roth, Bradley, Chafee, Metzenbaum, Harkin, and Simon. Nevertheless, I am eager to hear the issues this bill addresses, because I think they are some one of the most important environmental and energy questions to face this Nation in many years.

Mr. Chairman, as the senior Senator from the State of Minnesota, I came to the U.S. Senate in 1978 from a State with a rich heritage in preserving America's natural beauty and wisely using her natural resources. Minnesota is the home of the Boundary Waters Canoe Area Wilderness, Voyageurs National Park, the wild and scenic St. Croix River, and countless other gems of nature. In addition, I came to the Senate with more than a decade of public service in formulating a public policy consensus to protect nature's wonders and permitting the wise use of her natural resources. And I need not remind this August body, that during that time the country was on the crest of the 1970's second national energy crisis.

Thus, I bring with me the values of people with a very special awareness of the value of our vanishing wilderness areas, as well as a personal history of involvement and expertise in natural resources policy. And it is this awareness and expertise that leads me to join my distinguished colleagues to support this bill protecting the Arctic Natural Wildlife Refuge.

To review this Nation's energy policy a bit: in the heat of energy and economic crises of the late seventies and early eighties, we in the Congress laid the foundation for national energy policies. But with pressure from the current administration, those basic policy decisions were abandoned and any new efforts to formulate policy were strongly refuted. The result is that in the past nine years, I've had many occasions to test my own and my constituents' values as they relate to this generation's consumptive needs and the special values of future generations because there is no national energy policy.

Nevertheless, while the fossil-fuel industry is in the doldrums, and both alternative energy and evergy conservation initiatives are and have been stymied at every turn, there is paradoxically an effort to demonstrate a pending fossil-fuel shortage and an imperative for oil and gas exploration incentives. I am not persuaded. The energy policies and record of the last seven years has not persuaded me that the coastal plain of the Arctic National Wildlife Refuge should be opened for oil exploration.

The argument will be made that my support for this bill leaves four million Minnesotans, whose State is without any fossil fuel source except what is imported, without energy in a cartel-induced crisis; or that my sponsorship of this bill threatens the national security. I do not agree. It is the lack of a national energy policy that puts this Nation and my State at risk.

Like anyone from an energy-poor State, I'm keenly aware that oil, like all natural resources, is finite and must be used wisely and conservatively. Accordingly, it is my belief, and the reason I am cosponsoring this bill, that continual uncontrolled exploration and drilling for oil at the expense of all else is not the forward-looking answer to our energy needs and the Nation's long-term best interests. What is needed is a forward looking long-range energy policy that takes into account the realities of fossil fuel use and exploration while actively exploring energy conservation and alternative renewable energy options.

But the need for a forward looking energy policy is only part of my rationale for joining my colleagues in support of this bill and seeking a wilderness designation. My Minnesota heritage and personal involvement in preserving nature's beauty has allowed me, like many of my constituents to recognize the intrinsic value of nature in its pristine state. On August 18, 1980, I and 71 of my fellow Senators, voted overwhelming to support an amendment proposed by former Senator Tsongas and other Senators that laid the seeds for the current debate. It was this amendment that became known as the Alaska National Interest Lands Conservation Act. This act opened 95 percent of Alaskan lands that have high or favorable oil and gas potential for exploration. It also allowed the remaining 5 percent to be explored seismically. Included in this 5 percent is the now controversial coastal plain of the Arctic National Wildlife Refuge.

The reason oil and gas exploration was not allowed in the coastal plain in 1980 is because it was recognized then, as it is now, that the coastal plain was unique and extraordinarily important to wildlife. And that permitting exploration, on this most isolated coast, when all the other coastal areas can be explored, made no sense when balanced against the damage to the land and interference to wildlife. I agreed in 1980 to prevent oil exploration in this sensitive Tundra lands and do so again now.

Thus, when I have an opportunity to protect the last of this country's pristine Tundra lands as well as bringing common sense to this Nation's energy policy, I want to be counted among those who stand in the way of the drills and the pipelines, the derricks and the earthmovers and say "conservation instead of destruction."

This is the message I hope to send to those who see the coastal plain as the panacea to our energy needs. It is not. It is, in fact, just a placebo; the answer to our dependency on foreign oil doesn't lie in plundering our lands in the search for more oil to feel ever-increasing national appetites. Rather, it's in curbing those appetites, conserving our resources and in searching for alternative energy sources. Particularly, when the destruction of unique and environmentally sensitive lands are involved.

In summary, Mr. President, when balancing the need for a rational evergy policy and the certainty of irreversible environmental damage against the great odds against success in finding the promised pools of oil, I cannot help but oppose the exploration and devastation of the pristine coastal plain of the Arctic National Wildlife Refuge.

Finally, I want to remind my colleagues that this bill does not remove oil and gas reserves in Alaska from the National Treasury. It merely preserves the resource—all of it—for my children, theirs, and future generations.

I therefore add my name to the growing list of Senators supporting this bill.

Senator MITCHELL. We will resume this panel. Mr. Horn had completed his statement, and we interrupted the panel to hear from Senators Roth and Murkowski. We'll now resume with Mr. Russell.

STATEMENT OF ROBIE G. RUSSELL, REGIONAL ADMINISTRATOR, REGION X, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY ALVIN EWING, ASSISTANT REGIONAL ADMINISTRATOR FOR ALASKA OPERATIONS

Mr. RUSSELL. Thank you, Mr. Chairman and members of the committee. My name is Robie Russell, Regional Administrator of Region X, U.S. Environmental Protection Agency, and I'd like to introduce my Assistant Regional Administrator for Alaska Operations, Mr. Alvin Ewing, who is accompanying me today.

We're here at the committee's request to discuss EPA's comments on Interior's LEIS and concerning the proposal to authorize oil exploration and possible development and production within the ANWR established by section 1002. In addition, we have been asked to discuss present hazardous waste and water quality impacts at existing oil development sites on North Slope.

In the interest of time, I would briefly summarize the remainder of my remarks and then get to the last two pages. The body of the document discusses the process that we used to analyze the LEIS, the designations that we had, and the reasons that underlie those designations. I think that it's all pretty self-explanatory.

The committee also asked for our testimony regarding water quality and hazardous waste impacts from existing oil development on the North Slope. First, water quality: 18 offshore facilities are regulated under the Beaufort Sea general permit. The permit prohibits discharge of oil-based muds or diesel fuels and requires approval of muds and additives prior to use as well as monitoring and analysis of free oil, muds, and cuttings.

Near-shore activities are regulated by individual permits. Permittees are required to monitor effluent and receiving water quality, sediment quality, and benthic impacts. Except for isolated spills, the permitted offshore and near-shore facilities have generally operated in compliance with permits and discharges have not resulted in unacceptable impacts.

While ANWR development will likely result in discharges similar to those in Prudhoe Bay, topographical differences may result in different impacts. In ANWR the terrain slopes more steeply to the shoreline and beyond to the sea. It is, therefore, likely that marine discharges will dilute and disperse more easily than they do in the shallower Prudhoe Bay waters. Fewer lakes and streams in ANWR mean relatively less fresh water is available. A greater level of desalinization would likely be needed and the matter of briny discharges will have to be addressed. Fewer lakes and streams mean fewer surface waters are available to receive wastewater discharges.

On the subject of hazardous waste, virtually all of the approximately 50 million barrels of liquid waste generated on the North Slope currently qualify for RCRA exemption as drilling fluids, pro-

duced waters, and other wastes associated with the exploration, development, or production of crude oil, natural gas, or geothermal energy. Those wastes classified as hazardous were previously disposed of through deep well injection. However, the injection well is no longer available for hazardous wastes and they are now being transported out of the State of Alaska for disposal. The high cost of this transport has resulted in significant waste minimization, recycling, reuse, and product substitution. Standard Alaska has applied for a UIC Class I permit for the Endicott field to dispose of on-site-generated hazardous waste.

EPA meanwhile is studying the associated waste exemption. We will soon be submitting a report to Congress with recommendations as to how these wastes should be regulated.

Probably the most significant hazardous waste problems on the North Slope are caused by support industry activities. While larger companies tend to be more knowledgeable and responsible about adhering to regulatory requirements, some smaller firms have been less conscientious. Cleanup and disposal then become a task for Federal and State agencies and the oil companies after the contractor disappears or declares bankruptcy.

In conclusion, the issues which have been highlighted are environmentally significant. EPA's regulatory mission does not preclude the development of resources in ANWR, but requires our review to ensure the protection of the environment. EPA will continue to work closely with the Department of the Interior to resolve the remaining issues which I have highlighted.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you very much, Mr. Russell. You've established a commendable standard of brevity, which all future witnesses will have to work hard to exceed.

Ms. Moran, welcome. We look forward to hearing from you.

STATEMENT OF MARGARET A. MORAN, SPECIAL ASSISTANT TO HON. STEVE COWPER, GOVERNOR OF ALASKA, FOR THE ARCTIC NATIONAL WILDLIFE REFUGE, ACCOMPANIED BY JAMES EASON, DIRECTOR, DIVISION OF OIL AND GAS, ALASKA DEPARTMENT OF NATURAL RESOURCES

Ms. MORAN. Thank you. Mr. Chairman and members of the subcommittee, my name is Margaret Moran. I am the special assistant for the Arctic National Wildlife Refuge to Governor Steve Cowper of Alaska.

Mr. Chairman, accompanying me today is Mr. James Eason. He is the director of the division of oil and gas for the Alaska Department of Natural Resources. Should there be any questions on hydrocarbon potential, Mr. Chairman, with your permission, Mr. Eason will respond on the State's behalf.

I want to thank you for the opportunity to present the views of the State of Alaska on Federal management of the coastal plain of the Arctic National Wildlife Refuge. The State of Alaska strongly supports Federal legislation to open the coastal plain of ANWR to oil and gas exploration and development consistent with appropriate environmental stipulations. We cannot support proposals to

designate this area, the most prospective oil and gas frontier left in North America, as wilderness.

Located in the northeastern corner of Alaska, ANWR comprises 19 million acres. The only area that would be open to oil and gas activity is the 1.5 million acre coastal plain, 8 percent of ANWR. However, according to the Interior Department, only 12,000 acres, less than 20 square miles, is likely to be affected by development. This area comprises only .8 percent of the coastal plain and .06 percent of ANWR.

Although there has been much debate about designating ANWR lands as wilderness, it should be noted that 42 percent of ANWR, 8 million acres, is already established as wilderness. Included in this wilderness are 450,000 acres of coastal plain and 30 miles of coastline.

The 450,000-acre coastal plain adjoins Canada's 3-million acre Yukon National Park. The ANWR coastal plain lies between the oil and gas rich Canadian Mackenzie Delta and Prudhoe Bay. The Interior Department estimates that there is a 5 percent chance of finding at least 9.2 billion barrels of recoverable oil under the coastal plain, perhaps the largest oil discovery in U.S. history.

In 1973 when the Arab oil embargo caused such severe economic dislocation, the United States was only 35 percent dependent on imported oil. Today the United States is approximately 45 percent dependent on such oil. By the early 1990's, imported oil will account for over 50 percent of domestic demand.

Prudhoe Bay which currently accounts for 20 to 25 percent of all U.S. oil production has been pumping oil for many years and will begin to decline in the near future. This oil must be replaced by more domestic production or by imports.

The Interior Department estimates there is a 19 percent chance of finding oil on the coastal plain. History shows that unexplored areas produce oil discoveries only 5 percent of the time. Thus, a 19 percent chance of finding oil, four times more than usual, presents an excellent opportunity. Unfortunately, if exploration were authorized today, it would be 10 to 15 years before production could begin. For perspective, it is noteworthy that prior to drilling some industry officials estimated that the Prudhoe area contained as much as 2—that there was only a 2 percent probability that the Prudhoe area contained as much as 2 billion barrels of oil. We now know that 23.5 billion barrels were initially in place at Prudhoe Bay.

Notwithstanding the Nation's need for more energy, the State of Alaska believes that oil and gas development must proceed in an environmentally-sound manner. There has been much attention focused on waste management and on protecting the 180,000 animals in the Porcupine caribou herd which are present on the coastal plain for six to eight weeks each summer. Wildlife biologists have concluded that a 242,000-acre is especially important for reproduction of the Porcupine caribou herd. The State is confident that if this area receives special attention and if appropriate stipulations are in place for the remainder of the coastal plain, then oil and gas exploration and development can proceed in ANWR while adequately protecting the porcupine caribou herd.

Equally important to the environment is the manner in which development and production wastes would be disposed of. Time and experience with waste management in the Arctic over the past 20 years have provided vastly-improved technology and management techniques. The State believes that the track records of both industry and the Government regarding development and the regulation of development on the North Slope provide a good foundation for opening ANWR to responsible oil and gas development, and we believe that Congress has at its disposal the technology and the regulatory tools necessary to protect the coastal plains environment.

Mr. Chairman, the State's comments to the Secretary of the Interior on the draft 1002 report contain additional recommendations that the committee may find helpful. Our comments suggest ways to mitigate development impacts on the porcupine caribou herd. They also recommend a responsible approach for conserving other wildlife and fisheries resources in and adjacent to ANWR. Finally, they look at waste stream management issues and suggest mitigation measures.

With the chairman's permission, I will submit these comments to the committee.

Senator MITCHELL. Thank you very much, Ms. Moran.

Ms. MORAN. Additionally, Mr. Chairman, a number of State witnesses have testified before other congressional committees that have jurisdiction on ANWR, and, with your permission, I would also like to submit their testimony for the record.[1]

Senator MITCHELL. That's fine. We appreciate that. We thank you for your testimony.

We'll now begin questioning by committee members. In accordance with our rules, we will limit the time for each member's questions to 5 minutes and proceed in the order in which Senators appeared at the hearing.

Senator Baucus.

Senator BAUCUS. Thank you, Mr. Chairman.

I would like to ask each of the witnesses the same question: it seems to me that there's a conflict here.

In any conflict a natural inclination is resolution. I'm wondering, in the view of each of the witnesses, as to why or why not resolution is not appropriate here. As I understand each of you witnesses, you tend to think generally that there should be some exploration and development. Some of you tend to think there should be more than some others. Just as a beginning proposition, I would like you to state why or why not you think there cannot be a reasonable middle ground here; namely, tightly-controlled exploration and development in a limited area with very stringent, strong, environmental protections. Ms. Moran, you do think there can be limited development with tight environmental controls; is that correct?

Ms. MORAN. Yes. Mr. Chairman, Senator Baucus, the State strongly supports exploration and development in the Arctic National Wildlife Refuge. We believe that if Congress places appropriate environmental stipulations so that it can proceed in an environmentally——

[1] Retained in Committee files.

Senator BAUCUS. Could you expand a little bit? What are the strongest environmental controls that you think should be applied here? Be more specific.

Ms. MORAN. Mr. Chairman, Senator Baucus, the State would recommend to the committee that it consider requiring certainly best available technology to the industry and, with your permission, we could submit—and we have done for other committees—specific suggestions on mitigation measures that the State has used on their own oil and gas leases within the State.

Senator BAUCUS. What do you regard as the biggest problem, caribou calving?

Ms. MORAN. We certainly see protection of that area——

Senator BAUCUS. What is the greatest potential problem and environmental conflict as you see it with development?

Ms. MORAN. Mr. Chairman, Senator Baucus, I think the State would place equal weight to protection of the environment along with protection of the fish and wildlife.

Senator BAUCUS. That's not the question I asked. The question I asked really: As the State sees it, what's the first or second greatest potential environmental problem with limited development? What would that greater environmental problem be?

Ms. MORAN. Senator Baucus, I think that we would have to focus on waste stream management problems.

Senator BAUCUS. Waste stream management problems?

Ms. MORAN. Yes.

Senator BAUCUS. And what does the State advocate as the best protection against any problems that might develop there?

Ms. MORAN. What we would recommend is a joint Federal-State monitoring approach that was utilized during the construction of the Trans-Alaska Pipeline system and is also in legislation for the Alaska Natural Gas Transportation System. That joint Federal-State approach worked well on that construction of the TAPS and to date on the preconstruction phase of ANGTS.

Senator BAUCUS. Mr. Horn, what do you think the greatest environmental conflict is and what's the strongest, most definite protection that you would advocate to prevent that potential harm to the environment from occurring?

Mr. HORN. If you would look at the 1002 report, page 167 lists 29 specific stipulations that we would recommend be put in place to deal with different environmental questions, and they involve such things as time and space surface restrictions, so that drilling would basically be conducted during the winter months, and special steps to minimize conflicts during caribou calving and snow geese staging activities. We provide for the reinjection of drilling muds in waste waters.

We put together programs to limit noise within two miles of identified raptor nests. We developed environmental orientation programs for workers and requirements that rehabilitation and restoration be built, as a priority, into the permits that we issued, and those are just some of the major ones.

Senator BAUCUS. These are the recommendations on page 167; is that correct?

Mr. HORN. Yes. That's the list of the things that we think would do the job. We have also asked in prior testimony that any leasing

authority include the authority of the Department to suspend or cancel leases for environmental purposes. In other words, if a lease has been issued and we discover a serious environmental problem, we would have the authority to suspend or cancel that lease.

Senator BAUCUS. What are the two greatest problems as you see it?

Mr. HORN. I think the primary ones are amenable to a technical solution but they involve basically the provision of fresh water and the provision of gravel. Frankly, both of those are highly dependent on where the drilling takes place and where the discoveries are made.

Senator BAUCUS. Mr. Russell, my time is ticking away here. What's the greatest environmental problem as you see it and what's the strongest mitigating action you would recommend to prevent that damage from occurring?

Mr. RUSSELL. Well, the major environmental issue that we see within the purview of the agency's responsibility have to do with the issues of sufficient water and potential injury to water quality, air quality issues, and hazardous waste disposal, and, finally, the causeway issue in terms of either mitigation or migration in terms of wildlife.

Senator BAUCUS. Would you more precisely state what it is that you would advocate either the Congress or an agency of the State do to prevent those potential problems from occurring?

Mr. RUSSELL. If the Congress were to make a decision to go forward with activity in the ANWR, the first thing we would do—and have so stated all along; I would refer you back to our June 1st comment letter on the final LEIS, but, first of all, that all environmental requirements are met, including the requirements dealing with the appropriate permitting operations in handling of hazardous wastes and appropriate technologies that would be applied to control air problems and things of that nature.

The biggest concern that we have, and have so stated in our comments, relates to the lack of water in the area and what steps will be taken to deal with that, and what will be done about hazardous waste problems in terms of disposal management.

Senator BAUCUS. Thank you. Thank you very much.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Baucus.

Senator Stafford.

Senator STAFFORD. Thank you, Mr. Chairman.

Mr. Horn, under the present situation, can exploratory drilling occur under existing law?

Mr. HORN. Not within the Federal portions of the 1002 area. There is an exception on the 92,000 acres held by the Native Corporation, but on the Federal land section 1002 bars activity until Congress makes a specific decision to do so.

Senator STAFFORD. So there are really three options available to the Nation, to Alaska, and to this Congress, I guess. One would be to leave existing law alone.

Mr. HORN. Yes; and that would basically freeze the status quo and nothing would happen.

Senator STAFFORD. Yes. Another would be, of course, to convert the one-half million acres to a wilderness area, which would preclude, apparently for all time, any drilling in the area.

Mr. HORN. Yes, sir.

Senator STAFFORD. And the third would be to change the law to permit exploratory drilling within the ANWR area?

Mr. HORN. That is correct.

Senator STAFFORD. If I see a conflict here, it seems to me it's between preserving wildlife, both fowl and animals, in the ANWR area and the desire for exploring for oil. Would that be about correct?

Mr. HORN. I don't think so, Senator Stafford. I don't think that the track record and the studies indicate that there is going to be any significant or serious problems in terms of wildlife values.

Senator STAFFORD. Let me ask you, Are you basing that on the experience at Prudhoe Bay?

Mr. HORN. Not only the experience of Prudhoe Bay, but experiences in Canada—really, across North America—and with other species. Caribou inhabit that part of the world as well, and we conducted over 55 different biological studies in preparing the 1002 report. The entire body of evidence persuades us that you can go ahead with a prudent oil and gas leasing and development program without adverse effect on wildlife resources.

Senator STAFFORD. Have you been to Prudhoe Bay?

Mr. HORN. Many, many times.

Senator STAFFORD. ANWR also?

Mr. HORN. Oh, yes, including in the middle of the winter, which I highly recommend as an educational experience.

Senator STAFFORD. Would you agree, Ms. Moran, that the available options are leaving the law alone or opening ANWR to exploratory drilling or turning it into a wildlife refuge?

Ms. MORAN. Yes, I believe that those are the options.

Senator STAFFORD. And it's the wish of the people of Alaska, as represented by their State government, that it be opened up to exploratory drilling?

Ms. MORAN. That's correct, Senator.

Senator STAFFORD. Isn't it likely that if exploratory drilling occurs and oil is found, there will be a lot of pressure to go ahead and develop the found oil?

Ms. MORAN. Yes, that is correct.

Senator STAFFORD. All right, thank you.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Stafford.

Senator Breaux.

Senator BREAUX. Thank you, Mr. Chairman. I would like to ask Mr. Horn a question about the wildlife refuges.

I feel very strongly that it's not a question between development or preservation. I think a lot of people have tried to paint the options here as a choice between those who want to find oil and gas and develop the area or whether we want to preserve it from a standpoint of a wildlife refuge.

My good friend Tim Mahoney, who will testify on the next panel, compares this choice with the choice that was made previously with regard to filling the Grand Canyon in order to develop hydro-

electric power. Of course, that would have destroyed the Grand Canyon.

We have wildlife refuges all over the United States. We have numerous Federal and State refuges in Louisiana. There is oil and gas development and exploration activity on every one of them. I have visited these areas a number of times both in the winter and the spring, and I would compare every one of our refuges in Louisiana which have oil and gas development on it, with any other refuges as far as the amount of wildlife we have and the water fowl we have, the amount of natural resources we have, and the type of ecosystem that we have, as far as being a fragile ecosystem.

I think that the real test is a compatibility test, whether this activity fits within the purposes of that refuge. I guess my question is: Have the studies that have been done caused you to have any concern that that type of activity doesn't meet the existing compatibility test that is applied to all refuges throughout the lower 48 States?

Mr. HORN. As a matter of fact, we're absolutely persuaded and convinced that oil and gas development is fully compatible with the wildlife values that led to the establishment of this refuge in 1960. I would say as a matter of law there have been some questions about when you apply the compatibility test and given the case law, we would prefer that Congress give us a more express new standard attendant to the development of a leasing program for this area. Factually, we think it's totally compatible with the wildlife for an oil program to proceed.

Senator BREAUX. Thank you.

Senator MITCHELL. Thank you very much, Senator Breaux.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

Mr. Horn, what's the situation across the border in Canada as far as exploration and discovery? One of the previous witnesses touched on it. As I understood, they had done considerable exploration but had found no oil. Is that correct or incorrect?

Mr. HORN. The coastal plain is a physical, geologic or geographic feature that extends east of that red and runs all the way over to the Mackenzie Delta. The Canadians have drilled the entire coastal plain, including areas relatively close to ANWR. They made no discoveries immediately east of ANWR, and it was after they drilled that they made it park land on their side of the border. That drilling was done back in the early-to-mid-seventies.

They have done extensive drilling both in the Mackenzie Delta and in the immediate offshore areas where they have made commercial discoveries and are bringing these into production, both oil and gas.

Senator CHAFEE. What makes the optimism on the part of those who favor the drilling in this area—and I appreciate that nobody knows until you look, but based on the Canadian experience just next door, why would this look like such a prudent prospect?

Mr. HORN. You can see there, that is a seismically-mapped area. Every one of those blue items is an identified structure that has been picked out by the current seismic work, which was fairly rough. It's a minimum of 26 structures. Those two up in the northeast, south of Kaktovik, are both physically larger than Prudhoe

Bay. Moreover, the seismic work indicates that the sediment depths—that's the rock that might trap the oil—are enormously deep.

If you go on to the coastal plain on the surface, you can find source rock. That's rock permeated with oil. You can see it and you can smell it in a number of locations.

You take all of those factors and you put Prudhoe Bay immediately 65 miles to the west, and the Canadian geologic province immediately to the east, and this happens to be sandwiched in between. With all of those factors—the geologists rate it the most outstanding prospective oil and gas area in North America.

Senator CHAFEE. How do they account for the fact that Canada is right next door to the coastal plain and has nothing?

Mr. HORN. Well, the "area next door" begins about 40 or 50 miles to the east. Some parts were dry, and some had commercial fields. Obviously, there is a prospect that you may drill all 26 of those structures and, frankly, only one or two of them may hold oil. Obviously, you could drill two or three holes and say, no, nothing's there. You might have to drill quite a number.

I give an example: when they were looking for Prudhoe Bay (which again is only 65 miles to the west), I think it took them 8 to 10 wells in that one precise area before they hit the largest oil field in North America. Geology is not an exact science yet, and it's going to take a fair amount of exploration before they can pinpoint precisely where it is and how much they have.

Senator CHAFEE. Thank you.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you very much, Senator.

Senator STAFFORD. Before John yields his time, may I ask just one question?

Senator MITCHELL. Sure. Go ahead, Senator.

Senator STAFFORD. The difference, I guess, between then the Canadian side and our side and ANWR is that the seismic formations are much different and more likely to contain oil; would that be a fair statement?

Mr. HORN. No, I have never honestly seen the materials and obviously the down hole information generated by Canada. What has happened is that most of their discoveries are farther to the east over by the Mackenzie River. In the areas immediately adjacent—I'm going to say 40 to 50 miles east of here—they drilled holes and they turned up dry. Further east they found oil. The same thing happened on the west. The wells drilled immediately west of the Canning River over here on the left side of this map have turned up dry, but just a few miles away is Prudhoe Bay.

Now the geology is not uniform. It dips and flows.

Senator STAFFORD. A 20 percent chance of finding oil is a very high percent, isn't it?

Mr. HORN. Extraordinarily high, particularly for an area which is relatively small in geologic terms.

Senator STAFFORD. Thank you.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Stafford.

Senator Graham.

Senator GRAHAM. Thank you, Mr. Chairman.

Mr. Horn, In your written statement, you say,

> Because the 1002 area is the best domestic opportunity to help reverse or reduce the decline in domestic oil reserves and production, the public interest demands that the area be made available for oil and gas leasing with exploration and development conducted in an orderly and sensitive manner to avoid unnecessary adverse effects on the environment.

Could you put that paragraph into the context of what is the Department of the Interior's energy policy?

Mr. HORN. I think it's fairly simple. The Administration has a comprehensive energy policy, and one of the critical elements of that policy is that we need to make significant additions to our domestic reserve base to reverse the decline in domestic output. Now we are producing approximately 10 million barrels a day. If we don't make significant additions to the reserve base, that output will drop to 6 or 7 million barrels a day by the turn of the century.

We also know that Prudhoe Bay, which produces 20 to 25 percent of our domestic production, will begin to turn down next year. What that means is that we will only have two ways to make up that downturn in domestic production. We either bring on more domestic production in places like ANWR or we import more from our friends in OPEC. We, frankly, think that the case has been made rather persuasively that additional imports from OPEC are not good for our national security or not good for our national economy. Therefore, we think that steps need to be taken to add to the domestic reserve base. This is our most outstanding area; ergo, it should be explored.

Senator GRAHAM. Does the administration energy policy have a goal of what proportion of domestic consumption should be domestically produced?

Mr. HORN. I would have to defer to the Department of Energy people in terms of what the actual planning is. Very briefly I will run through the numbers that we have been given. We are consuming 16 million barrels a day, producing 10, importing 6.

I think the expectations are that with reasonable conservation, and changes in our transportation fleet, we might be looking at being able to drop consumption into the 14- to 15-million-barrel range by the turn of the century. But if we don't add to our domestic reserve base, we're then looking at a domestic output of 6 to 7 million barrels a day. Even with significant conservation, we will be 50 percent-plus dependent on foreign oil. Therefore, we think we have no choice but to pursue both prudent conservation and additional domestic production. We have to have both. We cannot conserve our way out of this problem, nor can we produce our way out. If we don't have both, we're going to be up a creek without a paddle.

Senator GRAHAM. I understand that there are two levels of expectation in this area. There is a 95 percent expectation and a 5 percent expectation, with the 5 percent being at several factors of greater potential. Assuming the 95 percent expectation is correct, how many years would that add to our domestic reserves?

Mr. HORN. They're talking at the 95 percent level of bringing on approximately 600,000 barrels of reserves. Now if you find that in one oil field, a 600,000-barrel oil field can operate for 10, 15, 20

years depending on the mechanics of the reservoir and how quickly you produce it.

Senator GRAHAM. You say 600,000 barrels?

Mr. HORN. That would be about the minimum amount that we would expect to find, assuming that commercial discoveries are found.

Senator GRAHAM. And what was the number that you gave of our current consumption?

Mr. HORN. Our current consumption is 16 million barrels a day from——

Senator GRAHAM. So 600,000 barrels, is that per day?

Mr. HORN. No, that would be total reserves that would be produced over time.

Senator GRAHAM. So we're talking about less than one day of our consumption?

Mr. HORN. Senator, excuse me. I have dropped some zeros. The correct figure is 600 million barrels, not 600,000. I can understand your concern. Even with the correct numbers, however, I don't think it's accurate to look at things in terms of how many days of supply because an oil field is something in which you make a major capital investment to bring on and it operates for 5, 10, 15, or 40 years. Obviously what you are looking at, then, is what can you bring onstream and keep onstream for an extensive period of time.

No field in Alaska comes onstream unless it's very, very large. Fields get shut down in Alaska that would make one a wealthy person in Louisiana, Oklahoma, or even Florida. You need to bring around big fields in Alaska because of the enormous costs attendant to operating in that rather remote and hostile environment.

Senator GRAHAM. On the 5 percent expectation, what is the level of production?

Mr. HORN. There we are looking at the prospect of 9.2 billion barrels of recoverable oil, which is comparable to Prudhoe Bay, the largest oil field in North America.

Senator GRAHAM. Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Graham.

Mr. Russell, I have a couple of questions for you. On June 1st of this year you wrote to Mr. Horn——

Mr. RUSSELL. That's correct.

Senator MITCHELL [continuing]. Providing EPA's review statements on the final legislative environmental impact statement. You attached to that an accompanying statement which said in part, and I'm going to read to you a couple of phrases from your statement and ask you a couple of questions about it:

With respect to cumulative effects, you said:

> Cumulative effects are not adequately evaluated in the final legislative environmental impact statement. The final statement provides a list of criteria for determining which action should be included in a cumulative effects analysis. Criteria appear to be unduly restrictive and narrow the focus of the analysis.

You further stated,

> Use of the criteria has resulted in only existing projects being considered. The potential for future large-scale development of offshore Beaufort Sea leases, oil and gas development in the Canadian Arctic, and construction of large diameter gas pipelines are only marginally considered.

With respect to the impacts to fisheries and wildlife, you said, and I quote again:

> Impacts are in many cases downgraded from the draft legislative environmental impact statement without any explanation or justification. The final statement has numerous examples of impact conclusions that are minimized in this manner.

You went on to say,

> Potential underestimation of impacts occurs throughout the legislative environmental impact statement. This is particularly true of impacts predicted for the Porcupine caribou herd, largely because they are based on selectively-chosen data from the Central Arctic herd in the vicinity of Prudhoe Bay.

Your comments then went on to note four differences between the two herds and states further,

> These differences strongly suggest that the Legislative Environmental Impact Statement predictions based on data for the Central Arctic herd are likely to underestimate impacts to the Porcupine caribou herd.

On the subject of air quality, you said in your statement:

> The final legislative environmental impact statement does not adequately assess primary and secondary air quality impacts.

You went on to say, after other language,

> Impairment of visibility is a potential impact where there is increasing concern relative to existing North Slope emission sources.

My first question to you: have I accurately quoted from your statement?

Mr. RUSSELL. Yes, you have, Mr. Chairman.

Senator MITCHELL. My second question is: have you received a written response to these statements from Interior?

Mr. RUSSELL. No, we haven't, Mr. Chairman.

Senator MITCHELL. Mr. Horn, I would like to ask you if you would provide to this committee in writing a response to the concerns raised by the EPA, not only the ones I have quoted, but in the entire document?

Mr. HORN. We would be more than glad to. We have been working with EPA since the receipt of that document to identify the concerns and answer them and have had countless meetings but have not yet put it comprehensively on paper.

I will say that the fundamental source of our disagreement has been that we were preparing a policy document pursuant to a congressional act, section 1002 of ANILCA, and EPA generally critiques these things as a project document. We said that they basically were critiquing it to too fine a point; that we were doing a policy document for Congress, not a lease-specific EIS and, therefore, some of the information they have asked for would be generated at subsequent steps of the leasing program if authorized, and it's information we can't generate now without engaging in speculation. But we'll be glad to provide you with this information. We will continue to work with them to answer their questions and concerns.

Senator MITCHELL. Mr. Russell, have you or anybody else at EPA been instructed to tone down your views on this?

Mr. RUSSELL. No, we haven't.

Senator MITCHELL. To change your position in any way?

Mr. RUSSELL. No, we haven't, Mr. Chairman. We have, as Mr. Horn indicated, had contact with the Department of the Interior and have pledged in our testimony today and in other appearances before other congressional committees to be willing to work with Interior to resolve the questions that were presented.

The basis of our analysis was a Ninth Circuit Court of Appeals decision which directed that this LEIS be treated as if it were a regular project document, and that's why we've placed the level of scrutiny on it that we have, because we certainly did have the same discussions about whether this was a policy document for Congress since Congress would make the ultimate decision.

We've gone through and listed our concerns in a detailed fashion. Some new data has come to light since that was written, particularly monitoring data regarding air quality that is available, and a number of other factors, but we still stand by the comments that we've made in the past.

Senator MITCHELL. Thank you very much.

Ms. Moran, we invite you, if you would care to do so on behalf of the governor, to respond or comment on the document which the EPA provided to Interior, if you care to do so, in writing when you have a chance to look at it.

The panelists for the next group are Mr. Tim Mahoney, Mr. Roger Herrera, Mr. Gaylord Nelson, Mr. William Van Ness, Jr., and Mr. Brock Evans.

Gentlemen, I assume that all of you were here at the beginning of the hearing. If not, let me repeat what I said. At 3:30, which is in just a few minutes, Secretary of State Shultz is going to be meeting with the Members of the Senate to discuss the current Summit.

What I would like to do—I believe it would be very much in your interest—is to ask those of you who are from this area to return at another time and we will schedule it as soon as possible before we leave this year, so we don't have to rush through this and we can hear you and get a chance to ask questions. I think it would be very much in your interest to do so.

The only person listed here as being from Alaska is Mr. Herrera. Did you come here from Anchorage?

Mr. HERRERA. Mr. Chairman, I have been here longer than I care to think. I came here from New York today, but I will be here until Wednesday of next week.

Senator MITCHELL. I can't promise you, Mr. Herrera, that we will be able to schedule this before Wednesday of next week. So what I would like to do, then—is everyone else here from the Washington area? Mr. Herrera, why don't we hear you? I don't think it's fair to you that you came all this way and not have a chance to get your say in. Unless some other member has a very strong objection to it, we'll then proceed as I've suggested. Does any member of the panel object to that, calling the others back?

Senator CHAFEE. No, I think that is a good idea. Mr. Chairman, I think you're going to have a tough time getting it in before the new year.

Senator MITCHELL. Well, all right.

Senator CHAFEE. Nothing is going to happen anyway before the new year.

Senator MITCHELL. Right.

Senator CHAFEE. I would hate to have the people think that it is going to be before the new year. We're going to be awfully busy in the next few days.

Senator MITCHELL. All right. Well, we'll try and, if not, we'll do it as soon as possible after the first of the year. But I assure you all we will have another meeting at which you will be provided the opportunity to come and present your views in a manner that you don't have to rush, and we can engage in the kind of exchange that we all would like to do.

With that understanding, Mr. Herrera, why don't you go ahead with your statement? We'll hear from you and then we'll recess the hearing.

STATEMENT OF ROGER C. HERRERA, MANAGER OF EXPLORATION AND LANDS, STANDARD ALASKA PRODUCTION CO., ANCHORAGE, AK

Mr. HERRERA. Thank you, Mr. Chairman.

My name is Roger Herrera. My remarks today represent the views of the Standard Alaska Production Company, and, as you noted, I am a resident of Alaska and have been there many years.

Perhaps I should say that I've been lucky enough to be paid to have walked all over the North Slope. Therefore, I have to disagree with certain of the previous testimony which says that the coastal plain of ANWR is unique and fragile. It is neither of those things. Anybody that's had the fortune or misfortune to walk about 500 miles along the widths of Alaska in front of the Brooks Range up to the Arctic Ocean in different locations will know that there is nothing unique scenically or biologically, in essence, about the 1.5 million acres of the coastal plain.

The mass of caribou that one sees there are duplicated, in fact in larger numbers, to the west in front of the Brooks Range. The various land forms and other animals and plant communities that one hears associated with the coastal plain occur again in equal abundance or greater abundance further to the west. I think it's sort of a misunderstanding to suggest that scenically or biologically this area has any attributes which are not present in abundance elsewhere on the North Slope of Alaska.

As for its fragility, again having spent a long time in the Arctic, I can tell you that anything that's fragile simply doesn't survive up there. It's about as fragile as this table. If I carved my initials in this table, which I assure you, Mr. Chairman, I have no intention of doing in the short time available, I would damage it and it would not recover from that damage. Similarly, one can do such things in the environment in the Arctic, but this table is not fragile. It will probably last longer than you or I. Certainly the Arctic isn't either, and none of the wildlife which live in the Arctic would survive if they were fragile, wildlife or plants.

So there are two descriptions which are bandied around and give sort of a poetic picture of the coastal plain which I don't think are valid, and in making a cold, hard or rational decision of the future of this area, I think one should ignore those sort of emotional terms.

It is very difficult to portary the protection incurred by existing law and regulation to the Arctic environment. Nobody bothers to read all the laws and regulations to start with, and when one lists them, they take up pages and pages, which again are too dull to contemplate and understand.

But the reality for those of us who have to work up there is that, I think, existing law and regulation and stipulations which apply to any action in the Arctic are extraordinarily thorough for anything that one does. One cannot do anything without a permit or permission of some kind.

While your consideration of this area must principally follow a concern for the environment, I think you will have a very hard time, indeed, imposing more environmental protection than presently exists. What you can do, and perhaps what you should do, is if you agree in your wisdom to open up the area to oil and gas exploration and development, which I think you can with a clear conscience because it will not be harmed by such activities, . . . is to rewrite some of the existing regulations and protective mechanisms so that everybody sees upfront, that they are present and are going to be followed. They will be there in the law and everybody must take note of them.

But in that rewrite you're not going to improve them very much for the simple reason that practicality and an evolution of care has resulted—given rise to those regulations to date. The moment a new technique, a new idea, comes into being which actually does improve the protection of the environment, it immediately gets written into the regulations and henceforth is mandated as a protective mechanism. I think this is how it should be. When one goes beyond that, one simply prevents actions from taking place. Of course, that's the wilderness option.

However, the wilderness option is perhaps worthy of a few comments, because, as Senator Murkowski said, "Is this really a wilderness?" I mean, it has abandoned Early Warning Stations. It has a large village. It's had 25 or 30 years of agriculture when reindeer were herded which caused certain disruptions of the natural biology in the area. It is not an untouched plain and shouldn't be portrayed as such.

The one thing that is of overwhelming concern and which is very difficult to counter is the aesthetics of the area. The problem with the arguments that development will spoil aesthetics is that, of course, only about 300 people a year can afford to go up there to enjoy the scenic wonders of the region, which as I said are by no means unique.

Mr. Chairman, I just want to make one final remark and I'll stop, and that is, Senator Breaux mentioned the compatibility of development with other wildlife refuges. Certainly he sees it in Louisiana, and it's great example in Alaska also. The Kenai National Wildlife Refuge has been the site of a moose range and other wildlife, many of which are duplicated on the North Slope, and also the site of production of oil and gas for the past 30 years. I don't think anybody has ever testified that those two are obviously incompatible and that oil development has not taken place in a responsible fashion—in fact, in a fashion which has allowed increases in the population of the wildlife.

That example is there in the same State that we're talking of and I think it's a very practical and valid indication that development and wildlife protection are totally compatible, even if one ignores the examples of Prudhoe Bay itself.

Thank you, Mr. Chairman.

Senator MITCHELL. Mr. Herrera, thank you very much.

As if to complicate things even further, a rollcall vote has just begun, so everyone will have to leave and go to vote.

To the other members and Senator Nelson, I apologize for the inconvenience. I'm sure you understand this better than anyone, having gone through it yourself.

Mr. NELSON. I did that to a lot of people.

Senator MITCHELL. I assure you all, though, we will reschedule the remainder of this hearing at the earliest possible time and look forward to hearing from the rest of you.

Thank you all very much. The hearing is in recess.

[Whereupon, at 3:35 p.m., the subcommittee recessed, to reconvene at the call of the Chair.]

[Statements submitted for the record and the bill S. 1804 follow:]

TESTIMONY OF WILLIAM P. HORN, ASSISTANT SECRETARY FOR FISH AND WILDLIFE AND PARKS, DEPARTMENT OF THE INTERIOR, BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION, SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS, CONCERNING THE ARCTIC NATIONAL WILDLIFE REFUGE COASTAL PLAIN RESOURCE ASSESSMENT REPORT TO CONGRESS.

December 10, 1987

Mr. Chairman, I am William P. Horn, Assistant Secretary for Fish and Wildlife and Parks of the Department of the Interior. I appreciate this opportunity to appear today to discuss the Secretary's report to Congress on the coastal plain of the Arctic National Wildlife Refuge, and S. 1804, to incorporate the coastal plain into the National Wilderness Preservation System.

As you know, Section 1002 of the Alaska National Interests Lands Conservation Act (ANILCA) directed the Secretary of the Interior to:

- o conduct biological and geological studies of the 1.5-million-acre coastal plain portion of the Arctic Refuge (the 1002 area), located in northeast Alaska;
- o report the results of these studies to Congress; and
- o recommend to Congress whether the area should be made available for oil and gas exploration and development.

During deliberations in 1977-80 about management of lands in Alaska, Congress expressed particular interest in the possibility of significant oil and gas deposits in the 1002 area and in the effect of development on the area's fish, wildlife and wilderness resources. The Congress set forth a deliberate

process for the Department of the Interior to study, analyze, and report on all of these resources and to provide a recommendation on future management of the 1002 area.

On June 1 the Secretary transmitted to Congress the final report and his recommendation for the 1002 area -- an orderly and environmentally sound program for leasing the entire 1002 area.

The results of the geological studies of the 1002 area have led industry and government geologists to conclude that 1002 area is the Nation's single best opportunity to increase significantly domestic oil production over the next 40 years. It is rated by geologists as the most outstanding petroleum exploration target in the onshore United States. Data from the Prudhoe Bay area to the west, and from the Canadian Beaufort Sea and Mackenzie Delta to the east, combined with promising seismic data gathered on the 1002 area itself, indicate geologic conditions exceptionally favorable for discovery of one or more supergiant fields (larger than 500 million barrels).

The area could contain potentially recoverable oil resources of more than 9.2 billion barrels, an amount nearly equal to the Prudhoe Bay oil field, which currently provides almost one-fifth of U.S. domestic production. If this estimate proves to be correct, development of the 1002 area resources would add significantly to domestic reserves.

If the 5 percent chance of more than 9.2 billion barrels of recoverable oil became a reality, this could yield production of more than 1.5 million barrels per day. Estimates of net national economic benefits based on 9.2 billion barrels of oil production, and other economic assumptions, are as high as $325 billion.

Based on our mean conditional economically recoverable oil estimate of 3.2 billion barrels, 1002 area production by the year 2005 could provide 4 percent of total domestic demand, and 8 percent of domestic production (about 660,000 barrels per day), and reduce imports by nearly 9 percent. This could provide net national economic benefits of nearly $80 billion, including Federal revenues of $38 billion.

Production from the 1002 area could begin at a time when a decline in production is expected at Prudhoe Bay. Prudhoe Bay production is expected to peak soon, and will have declined significantly by the year 2000. Production of the 1002 area's potential resources could substantially offset this significant and certain decline.

The proximity of the 1002 area to Prudhoe Bay and the Trans-Alaska Pipeline System is also an important factor. The Trans-Alaska Pipeline System provides a ready means for bringing 1002 area oil to domestic markets, and development of this area would prolong the useful life of the pipeline system and permit

continued production from North slope fields which would otherwise be uneconomical.

This Nation currently imports thirty-three percent of its domestic oil needs, and the National Petroleum Council predicts that in the year 2000 we will import between 52 to 68 percent of our demand. Oil production from the 1002 area would not only reduce the need for imported oil, but also the amount of foreign exchange needed to pay for petroleum imports, bringing about a more favorable balance of trade. In 1984 the cost of importing crude oil and refined petroleum products was more than $59 billion, an amount approximately equal to 50 percent of our trade deficit. The cost of imports in 1986 was $28 billion, as a result of lower oil prices. However, the Department of Energy has predicted that by 1995 oil imports may cost the equivalent of $80 billion. America's growing reliance on imported oil could have potentially serious implications for our national security as well. Production from the 1002 area would reduce our reliance on oil from the unstable Persian Gulf region, would reduce our vulnerability to disruptions in the world oil market, and would contribute to our national security.

Because the 1002 area is the best domestic opportunity to help reverse or reduce the decline in domestic oil reserves and production, the public interest demands that the area be made available for oil and gas leasing, with exploration and

development conducted in an orderly and sensitive manner to avoid unnecessary adverse effects on the environment.

Our ability to conduct oil exploration, development and production in a careful and environmentally sound manner is a major factor leading to the Secretary's conclusion that full leasing is the preferred alternative.

Environmental Consequences of Development

The 1002 area provides a variety of outstanding arctic habitats which support fish and wildlife species of national and international significance, including muskoxen, snow geese, and the Porcupine caribou herd -- the sixth largest caribou herd in North America.

More than 50 separate biological studies were conducted in the 1002 area since 1980. These data were synthesized in the final report and legislative environmental impact statement which accompanied the Secretary's recommendation, and were used to provide the best assessment of the potential environmental consequences of oil development in the 1002 area.

Potential impacts were assessed at three stages: exploration, development drilling, and production. The impact analyses predicted that exploration and development drilling activities would generate only minor or negligible effects on all wildlife resources on the 1002 area. Therefore, the focus is on

production, and our impact analyses assumed the discovery of 3.2 billion barrels of producible oil (the mean conditional economically recoverable estimate). The analyses concluded that in fact more than 9.2 billion barrels could be produced with no significant additional environmental impacts than would result from production of 3.2 billion barrels.

Production is expected to directly affect 12,650 acres, or 0.8 percent, of the 1002 area. The consequences of this level of production on important species such as brown bears, snow geese, wolves, and moose, as well as well as the Central Arctic caribou herd, are expected to be negligible, minor, or moderate.

The only potential "major" effects are limited to the Porcupine caribou herd and the reintroduced muskox herd. "Major biological effects," for purposes of the analysis, were defined as: "widespread, long-term change in habitat availability or quality which would likely modify natural abundance or distribution of species. Modification will persist as least as long as modifying influences exist."

Porcupine and Central Arctic Caribou Herds

Although comparing the effects of Prudhoe Bay development on the Central Arctic caribou herd with the effects of similar activities in the 1002 area on the Porcupine caribou herd must be done with caution, experiences at Prudhoe Bay provide a strong measure of assurance that the caribou can coexist

successfully with oil development. Substantial empirical evidence has been gathered over the years regarding the interaction of the Central Arctic herd with the Prudhoe Bay complex. Although a considerable portion of the herd's range, including calving areas, is occupied by oil production facilities, the herd has prospered and in fact tripled in size since oil activities began in the area in 1968.

The fact that billions of barrels of oil have been produced and transported from Prudhoe Bay while the area's fish and wildlife resources continue to thrive indicates that effective environmental techniques and technologies are available for use in the 1002 area, a short distance to the east.

Biological studies have found that the Porcupine caribou herd calves in different areas each year -- throughout the 1002 area, elsewhere in the Arctic Refuge, and in Canada -- on an area totaling approximately 8.9 million acres. This year, for example, the herd calved almost entirely in Canada. Moreover, the herd is present in the 1002 area for calving, post-calving and insect-relief activities only 6 to 8 weeks annually, primarily from mid-May to mid-July.

The Porcupine caribou herd has shown some preference for calving on the Arctic Refuge coastal plain, including the upper Jago River area (84,000 acres, or 5.4 percent of the 1002 area), where portions of the herd have calved in approximately half of

the past 15 years. Thus, a potential "major" consequence would be the possible displacement of those portions of the herd seeking to calve in the upper Jago River -- should this area be the site of a major producing oil field.

This displacement would be caused by caribou avoiding development activities. Caribou avoidance depends on factors such as caribou age and sex, aggregation size, presence of calves, and the nature of the disturbance. Cows with newborn calves are more sensitive, while bulls, barren cows, and yearlings are less sensitive to human activity. At Prudhoe Bay, as many as 4,000 bulls, barren cows and yearlings of the Central Arctic herd remain near the oil field facilities. Total avoidance is thus not expected.

Our studies indicate maternal cows and calves would probably move varying distances away from developments. We would expect areas within 1-2 kilometers of developments to be largely avoided by these animals, and reduced use to occur outward an additional kilometer. It is unlikely, though possible, that such displacement would result in any appreciable decline in herd size.

Both the Central Arctic and Nelchina herds routinely cross the Trans-Alaska Pipeline with no adverse effects. Similarly, other caribou herds in Alaska and Canada (i.e., Nelchina, Fortymile, and Central Arctic) routinely cross highway and road systems.

Although it is not known whether development, including roads and oil pipelines, could affect the migratory habits of the Porcupine caribou herd, it already encounters the Dempster Highway in Canada during its annual migrations and crosses the road with no measured adverse effects. This pattern of successful interaction with roads and pipelines during migration is expected to continue for the Porcupine caribou herd if oil production facilities were constructed in the 1002 area..

In addition, the Porcupine caribou herd should not be affected adversely during the short-term period (6-10 days) that it uses the 1002 area for insect relief following calving. The ability of the herd to move to insect-relief areas along the coast is unlikely to be significantly affected by pipeline-road corridors crossing the 1002 area.

Furthermore, the long period of time required to bring commercial fields into production would provide ample opportunity to develop any additional mitigation measures that may be needed to address unexpected impacts.

Biological predictions are necessarily cautious. In the 1972 environmental evaluation for the Trans-Alaska Pipeline System, the following possible effects on the Central Arctic herd were predicted: "The combined barrier effects of the highway and pipeline might well reduce the number of animals using the winter range east of the highway." As events have demonstrated,

however, these concerns subsequently were resolved completely with environmentally sensitive techniques and technologies. Biological predictions in the Secretary's report/LEIS for the 1002 area naturally are cautious as well.

Muskoxen

Muskoxen disappeared from the 1002 area at the turn of the century as a result of overhunting. Those that now occupy the area are the result of a successful reintroduction program begun in 1969 by the Fish and Wildlife Service. The potential effects of oil and gas activities on the area's muskoxen are unknown, although biologists predict that "major" effects could be: (1) substantial displacement from currently used habitat, and (2) a slowing of the herd's growth rate, as distinguished from a diminution in herd size. It should be noted that thriving muskoxen populations are found elsewhere in Alaska and Canada, and are being established in additional areas in Alaska.

Subsistence

With regard to subsistence, potential effects of 1002 area oil production fall into two categories: effects on the village of Kaktovic, and effects on villages far removed from the 1002 area. In the case of Kaktovic, it is possible that a "major" restriction of subsistence activities could occur. These consequences would not likely result from reduced wildlife resources but, rather, could result from the physical changes proximate to Kaktovik which could interfere with traditional

activities. Moreover, distribution patterns of wildlife resources likely to be affected by oil production would necessitate some alterations in traditional subsistence patterns.

We are committed to working with village of Kaktovik, the North Slope Borough, and State of Alaska to minimize the effects of oil activities on the subsistence activities of Kaktovik residents.

Subsistence effects on villages outside the 1002 area, including those in Canada, are expected to be minimal. Because it is most probable that oil activities will not create adverse population changes in the Porcupine caribou herd, other villages which annually use these caribou resources should not be affected. Migratory patterns of the herd also are likely to be unaffected by oil activities. Accordingly, the herd is expected to adhere to its traditional patterns, which make it available to these villages.

The residents of Kaktovik take an average of 100 caribou annually, from both the Central Arctic and Porcupine herds. The total annual subsistence take by all other Native hunters from the Porcupine herd, in both Alaska and Canada, ranges between 850 and 4,400 animals. The current population of the Porcupine caribou herd is about 200,000 animals.

We recognize the importance of ensuring the continued customary and traditional use of this internationally shared resource, and we are committed to efforts that will preserve the Porcupine caribou herd for future generations of people who rely on this resource for nutritional, cultural and other essential needs. The Porcupine caribou agreement with Canada will enhance international cooperation and coordination on management of the herd so that both countries can effectively secure the availability of this resource.

Environmental Safeguards and the Leasing Process

The potential effects predicted from oil production were considered fully throughout the final report/LEIS and in the development of the Secretary's recommendations. Site-specific measures can be taken to avoid unnecessary adverse effects on the environment from oil production in the 1002 area.

Although the exact process would depend upon the leasing program established by the Congress, steps which might be included in such a leasing program are:

o compliance with the National Environmental Policy Act (NEPA) for each lease sale, each exploration plan, and each operator/lessee development and production plan;

o compliance by each operator/lessee, or the Department of the Interior, as appropriate, with other laws such as the Clean Air Act, Clean Water Act, Endangered Species Act, National

Historic Preservation Act, and ANILCA. The lease would also be governed by Departmental regulations.

o giving the Secretary authority to establish requirements for oil and gas operations that allow them to proceed in an economically reasonable manner, but require them to avoid unnecessary adverse effects on the 1002 area's wildlife, habitat and environment.

o granting the Secretary competitive leasing authority (to be delegated as he believes proper), similar to that used to lease the National Petroleum Reserve in Alaska. The Secretary should also have authority to decide such issues as unitization, drainage, diligence and lease terms and management.

o granting the Secretary authority to suspend or terminate any lease in the 1002 area at any time, in the same manner as prescribed in the Outer Continental Shelf Lands Act, as amended. If leases are terminated for reasons beyond the control of the operators/lesees, they should be compensated in a manner similar to that prescribed in the Outer Continental Shelf Lands Act as amended.

o granting the Secretary authority to require lessees to restore leased tracts to protect environmental values, to the extent reasonably possible and desirable.

o granting the Secretary authority, which would supersede ANILCA Title XI, to grant rights-of-way and easements across 1002-area lands for oil-and-gas-related activities and facilities, including authority for the Secretary to require

siting and modification of proposed facilities to avoid unnecessary duplication of roads and pipelines.

o requiring all geological and geophysical data acquired with respect to the 1002 area to be shared with the Secretary upon request, with requirements for ensuring confidentiality.

In light of the extensive environmental analysis done to prepare the final report/LEIS, the Secretary has recommended that it be adopted statutorily as the programmatic EIS for a leasing program for the 1002 area.

The final report/LEIS contained 29 generalized mitigation measures which, when adapted to site-specific needs and undertaken in compliance with the other recommendations made by the Secretary, will permit oil leasing and production to be accomplished in a manner consistent with protection of our fish and wildlife resources.

The 29 generalized mitigation standards contained in the Secretary's report are attached to my testimony. Site-specific, detailed stipulations would be determined for the various oil-related activities in accordance with these standards during the NEPA process for the activity in question. I would like to stress that these standards are generalized and hypothetical. Only site-specific analyses, based on the activity proposed for that site, can determine the best mitigation and environmental protection standards for any given location.

Because there has been much discussion of possible adverse impacts of water and gravel use on the wildlife resources of the area, I would like to use these as examples of how the mitigation measures can be used to avoid or minimize adverse effects. We would consider prohibiting the removal of gravel from active stream channels on major fish-bearing rivers and requiring site-specific approval for any gravel removal activities. We would monitor water levels and prohibit winter water removal from fish-bearing waters, or from springs and tributaries feeding such waters, where appropriate to protect water availability for fish and wildlife. Furthermore, we would also look at prohibiting water removal at any time from fish-bearing waters if the result would be water levels that would not easily support indigenous fish populations at current levels, or that would damage spawning or rearing habitat.

There would be no surface occupancy in the Sadlerochit Spring special area, to protect the aquatic habitat essential for fish overwintering.

We might permit gravel removal only on a site-specific approval basis within a specified distance of the high water mark on specified watercourses, to protect riparian habitats and water quality.

The report also suggests that off-stream reservoirs be created in conjunction with gravel extraction to provide additional water sources. Stipulations similar to those in the regulations used to govern the seismic exploration program on the 1002 area, and the Chevron drilling operations on the Kaktovik Inupiat Corporation (KIC)/Arctic Slope Regional Corporation (ASRC) lands, could also be utilized, including requirements for no significant alterations of the banks of streams, rivers or lakes, and no use of explosives within, beneath, on, or in close proximity to fish-bearing waters.

We would also look at how operations could be conducted in a manner that does not impede the passage of fish (where doing so would affect the population), disrupt fish spawning, overwintering or nursery areas, or block, change, or cause significant siltation or pollution of streams, rivers, lakes or ponds. Of course, rehabilitation plans would be required.

We have also recommended that the Secretary be given authority to require no unnecessary duplication of facilities in the Coastal Plain, and authority to subject requests for rights of way to the same environmental standards, without regard for the access provisions of Title XI of the Alaska National Interest Lands Conservation Act. This will assure that the development scenario designed for ANWR is the most coordinated and efficient possible consistent with environmental protection. It will also

assure that the "footprint" on the tundra from these activities is minimized.

Because Section 1002(i) of ANILCA withdrew the 1002 area from operation of the mineral leasing laws, and Section 1003 prohibited "leasing or other development leading to the production or oil and gas" in the area "until authorized by an Act of Congress," specific legislation must be enacted to implement these recommendations.

In recommending that Congress enact legislation to open the 1002 area for oil and gas leasing, the Secretary also recommended that Congress enact legislation to open the KIC/ASRC lands within the Arctic Refuge to similar activities. The ASRC's right to develop and produce any oil and gas which may underlie the KIC/ASRC lands within the Arctic Refuge is, by virtue of the 1983 Chandler Lake Exchange Agreement, expressly contingent upon Congressional authorization of oil and gas leasing or development and production within the 1002 area, or on the KIC/ASRC lands specifically.

Wilderness Designation

The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the Arctic ecosystems in North America. To protect this resource, approximately 8 million acres of the refuge was

designated as wilderness by ANILCA section 702(3), and joins the 1002 area to the south and east. I would note that the coastal plain is included in the wilderness area from the eastern 1002 area boundary to the Canadian border.

If the 1002 area were added to the present designated wilderness areas, permitted uses would include hunting, fishing, backpacking, river trips, and photography. Commercial activity would be restricted to commercial guiding for such activities. These activities may be restricted or eliminated if necessary in designated wilderness under the provisions of other laws or regulations. Motorized equipment would generally be prohibited. The use or motorboats and snowmachine (during periods of adequate snow cover) would be authorized for traditional activities -- for example, subsistance harvest or access to inholdings such as native allotments. Cabins could constructed in wilderness areas if they were necessary for subsistance trapping, public safety, or administration of the area.

Oil exploration and production would not be permitted.

Conclusion

Given the proven record that potential adverse environmental effects of oil production can be substantially avoided, and given America's need for additional domestic energy resources, it is essential that the Congress enact legislation to authorize

the Secretary of the Interior to conduct an orderly oil and gas leasing program for the entire 1002 area.

Pasage of S. 1804 would be totally inconsistant with this, and we accordingly oppose its enactment.

SUMMARY OF RECOMMENDED MITIGATION FOR THE 1002 AREA

Following is a summary of safety and environmental mitigation measures that could be recommended for various phases oil and gas exploration, development, production, and transportation activities on the 1002 area.

Mitigation measure	Results
1. Limit oil exploration, except surface geology studies, to November 1-May 1 (exact dates to be determined by Refuge Manager). Cease exploration activities and remove or store equipment at an approved site by May 15. Local exceptions may be made.	Will limit disturbance to periods when most fish and wildlife species are absent.
2. Consolidate, site, construct, and maintain facilities and pipelines to minimize effects on sensitive fish and wildlife habitats and species. Locate nonessential facilities outside concentrated caribou calving areas.	Will avoid or minimize disturbance in, or loss of, environmentally sensitive areas and allow free passage and natural movement of fish and wildlife.
3. Design all bridges and culverts to handle at least 50-year flood events.	Will prevent damage and disturbance of fish habitats.
4. Use ice or gravel-foam-timber pads, where feasible.	Will reduce gravel requirements and acres of habitat modified.
5. Prohibit: gravel removal from active stream channels on major fish-bearing rivers; winter water removal from fish-bearing waters, or springs and tributaries feeding into fish-bearing waters; spring, summer, or fall water removal from fish-bearing waters to levels that will not easily pass fish or maintain quality rearing habitat.	Will minimize disturbance to fish and degradation of fish habitats.
6. Elevate pipelines to allow free passage of caribou or place ramps or bury as feasible.	Will allow migration and other movements of caribou and large mammals.
7. Separate roads and pipelines 400-800 feet, depending on terrain, in areas used for caribou crossing.	Will enhance crossing of linear structures by caribou and other mammals.
8. Construct docks and causeways so that fish movements are not impeded and lagoon water chemistry is basically unchanged.	Will provide for fish and marine mammal movement and lessen degradation of near-shore marine habitat.
9. Avoid construction in coastal areas near river systems with topographic relief or bluffs; otherwise, minimize construction activities along the coast through the denning period, approximately mid-March. Minimize activities along the coast during late October-early November when polar bears come ashore to den.	Will reduce disturbance to polar bears, and prevent destruction of potential bear den and raptor nest sites.
10. Restrict surface occupancy in the zone from the coastline inland 3 miles to marine facilities and infrastructure essential to move inland beyond the restricted zone; drill pads and production facilities could be allowed within the zone 1.5 to 3 miles from the coast on a site-specific basis.	Will permit caribou use of coastal insect-relief habitat and reduce disturbance of nesting waterfowl and other species.
11. Prohibit surface occupancy in the Sadlerochit Spring Special Area (pl. 1A)	Will prevent degradation of a unique environment and prevent loss of water essential for fish overwintering.

Mitigation measure	Results
12. Minimize surface occupancy in immediate vicinity of areas identified as supporting Thlaspi arcticum. Include information on identification and need for avoidance of Thlaspi arcticum in all environmental orientation briefings.	Will prevent destruction of Thlaspi arcticum.
13. Use bear-proof fencing around certain facilities; develop solid waste management plans; incinerate putrescible waste daily; prohibit wildlife feeding; institute employee education programs as appropriate.	Will minimize bear/human confrontations, and reduce attraction of and increases in scavenger populations.
14. Inventory project areas for cultural resources, evaluate resources, and implement mitigation to avoid or minimize impact.	Will preserve cultural resources (archeological and historic sites) to the maximum extent possible.
15. Prohibit off-road vehicle use within 5 miles of all pipelines, pads, roads, and other facilities, except by local residents engaged in traditional uses or if otherwise specifically permitted.	Will minimize disturbance to wildlife, reduce destruction of vegetation, and permit migration of large mammals.
16. Establish time and area closures or restrictions on certain surface activity such as exploration, vehicle movements, and other activity that can be reasonably rescheduled, in areas of wildlife concentration during muskox calving, April 15-June 5; caribou calving, May 15-June 20; caribou insect harassment, June 20-Aug. 15; snow goose staging, Aug. 20-Sept. 27; and fish overwintering and spawning.	Will protect species from disturbance during critical periods.
17. Limit use of development infrastructure, roads, and airstrips to persons on official business.	Will reduce disturbance and human/wildlife interaction.
18. Reinject drilling muds, cuttings, and other wastes where geologically feasible. Remove hazardous wastes off refuge to an approved disposal site.	Will minimize areas needed for reserve pits and reduce potential for contaminant spills.
19. Close areas within 3/4 mile of high-water mark of specified water courses to permanent facilities and limit transportation crossings. Gravel removal may occur on a site-specific basis.	Will protect riparian habitat and reduce stream pollution and disturbance in an important and limited habitat.
20. Prohibit use of explosives or other noisy activities within 2 miles of raptor nest sites April 15-August 31 (June 1 if nest is unoccupied), unless specifically authorized by the FWS.	Will protect nesting peregrine falcons and other raptors from disturbance.
21. Prohibit ground level activity, permanent facilities, and long-term habitat alterations (material sites, roads, and airstrips) within 1 mile of known peregrine or other raptor nest sites April 15-August 31 (June 1 if nest is unoccupied) unless specifically authorized.	Will protect nesting peregrine falcons and other raptors from disturbance.
22. Survey suitable habitat annually to locate nesting peregrines and other raptors.	Will avoid conflicts between development and nesting raptors.
23. Establish no-activity zone of at least 1/2 mile around any confirmed polar bear den.	Will prevent disturbance during denning.

Mitigation measure	Results
24. Close area within 5 miles of development and associated infrastructure to hunting, trapping, and discharge of firearms, except for subsistence uses only, on a site-specific basis, where there will be major effects on those uses.	Will increase public safety and reduce direct mortality of caribou, muskoxen, bears, and waterfowl; lower disturbance and increase the likelihood of habituation by species encountering development; however, will result in negative effects to subsistence uses of some areas.
25. Develop and implement plans for control, use, and disposal of fuel and hazardous wastes.	Will reduce potential for contaminant spills.
26. Monitor populations, productivity, movements, and general health of key species. Research measures to further minimize adverse effects of development. Implement corrective actions.	Will allow early identification of problems and implementation of corrective measures for caribou, muskoxen, polar bears, snow geese, arctic char, and others.
27. Provide: environmental orientation briefings for workers; program for monitoring development activities; continuation of fish and wildlife population monitoring; follow-up programs to evaluate effects.	Will increase environmental awareness of workers; give managers continuing baseline information to analyze effects of development and improve protective measures; help to ensure effectiveness of mitigation.
28. Develop plans in conjunction with area residents and organizations to properly manage impacts on communities.	Will minimize undesirable sociocultural and socioeconomic impacts, such as chemical dependency, boom-and-bust cycle, and cultural disorientation.
29. Develop and implement an approved rehabilitation plan as part of the appropriate permit stages.	May provide total or partial restoration of habitat values in affected area.

SENATOR FRANK H. MURKOWSKI

TESTIMONY BEFORE

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

S.1804

DECEMBER 10, 1987

GOOD AFTERNOON MR. CHAIRMAN--MEMBERS OF THE SUBCOMMITTEE. I APPRECIATE THE OPPORTUNITY TO TESTIFY BEFORE YOUR SUBCOMMITTEE ON THIS ISSUE OF CRITICAL IMPORTANCE TO MY STATE OF ALASKA.

I HAVE BEEN ADVISED THAT THE SUBCOMMITTEE INTENDS THIS TO BE AN OVERSIGHT HEARING ON THE ISSUE OF MANAGEMENT OF THE ARCTIC NATIONAL WILDLIFE REFUGE (ANWR). HOWEVER, THE BASIS FOR THIS HEARING IS SENATE BILL 1804, TO DESIGNATE THE COASTAL PLAIN OF ANWR AS A WILDERNESS AREA. THAT SITUATION RAISES THE CONCERNS THAT I INTEND TO ADDRESS THIS AFTERNOON.

COMMITTEE LACKS JURISDICTION

FIRST, MR. CHAIRMAN, IS THE ISSUE OF COMMITTEE JURISDICTION. I QUESTION WHETHER THIS COMMITTEE HAS ANY BASIS FOR HOLDING HEARINGS ON THE ANWR ISSUE, AND I BELIEVE THAT THE REFERRAL OF S.1804 TO THIS COMMITTEE WAS IN ERROR. AS NEAR AS I CAN TELL, S.1804 IS THE FIRST WILDERNESS BILL AFFECTING A NATIONAL WILDLIFE REFUGE TO EVER BE REFERRED TO THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE.

JOHNSTON, MCCLURE LETTER

IN THAT REGARD, MR. CHAIRMAN, I ASK TO INSERT FOR THE RECORD A NOVEMBER 18, 1987 LETTER FROM SENATORS JOHNSTON AND MCCLURE TO THE MAJORITY AND MINORITY LEADERS CONCERNING THE REFERRAL OF S.1804. I WISH TO MAKE CLEAR THAT I AM SUBMITTING THIS LETTER FOR MYSELF AND NOT ON BEHALF OF SENATORS JOHNSTON AND MCCLURE.

PUBLIC LAND POLICY IS JURISDICTION OF ENERGY COMMITTEE

IN ADDITION, THE ISSUE OF OIL AND GAS LEASING ON THE COASTAL PLAIN OF ANWR VERSUS DESIGNATING THE AREA AS WILDERNESS IS A LAND USE QUESTION. PUBLIC LANDS ISSUES ARE, AND ALWAYS HAVE BEEN, WITHIN THE EXCLUSIVE JURISDICTION OF THE COMMITTEE ON ENERGY AND NATURAL RESOURCES. AS A MEMBER OF THAT COMMITTEE, AND AS A FORMER MEMBER OF THIS COMMITTEE, I AM DEEPLY DISTURBED BY THIS APPARENT LACK OF REGARD FOR COMMITTEE JURISDICTION.

CHAIRMAN MITCHELL AS JUDGE OF FACTS

I HAVE NO ILLUSIONS THAT THE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS WILL CONCEDE JURISDICTION ON THE ANWR ISSUE. GIVEN THAT, I AM PLEASED TO KNOW THAT THE DISTINGUISHED SENATOR FROM MAINE WILL BE CHAIRING THE SUBCOMMITTEE CONDUCTING THIS HEARING. MR. CHAIRMAN, YOU ARE A FORMER JUDGE. IN THAT CAPACITY, YOU DEVELOPED AN OUTSTANDING ABILITY TO WEIGH ALL OF THE FACTS OF A PARTICULAR CASE BEFORE MAKING A DECISION IN THAT CASE. I AM CONFIDENT THAT, AFTER WEIGHING AND COMPARING ALL OF THE FACTS ON THE ANWR ISSUE, YOU WILL REACH THE SAME DECISION THAT I HAVE REACHED. THAT IT IS IN OUR NATIONAL INTEREST TO AUTHORIZE OIL AND GAS LEASING ON THE COASTAL PLAIN OF ANWR.

FOR THE BENEFIT OF THE COMMITTEE, I WOULD NOW LIKE TO ADDRESS SOME OF THOSE FACTS.

NO DESTRUCTION OF CARIBOU

THE PROPONENTS OF S.1804 CLAIM THAT DESIGNATING THE COASTAL PLAIN AS WILDERNESS IS NECESSARY TO ENSURE THE SURVIVAL OF THE PORCUPINE CARIBOU HERD. THIS CLAIM IGNORES SEVERAL WELL DOCUMENTED FACTS. THE PORCUPINE CARIBOU HERD ONLY OCCUPIES THE COASTAL PLAIN FOR APPROXIMATELY 3-4 WEEKS OUT OF EVERY YEAR. TO REACH THE COASTAL PLAIN OF ANWR, THE CARIBOU MIGRATE THROUGH CANADA, CROSSING THE DEMPSTER HIGHWAY ON SEVERAL OCCASIONS. WHILE THEY USE THE ANWR COASTAL PLAIN FOR CALVING, THEY ALSO FREQUENTLY CALVE ON THE CANDAIAN COASTAL PLAIN--WHERE THE CANADIANS HAVE ALREADY DRILLED SOME 80 OIL EXPLORATION WELLS.

CENTRAL ARCTIC HERD QUADRUPLED IN SIZE

BUT MOST IMPORTANTLY, MR. CHAIRMAN, THIS ARGUMENT FOR WILDERNESS IGNORES OUR EXPERIENCE AT PRUDHOE BAY. THE CENTRAL ARCTIC CARIBOU HERD, WHICH INHABITS THE PRUDHOE BAY AREA YEAR ROUND, HAS GROWN FROM 3500 ANIMALS IN 1972 TO OVER 16,000 ANIMALS TODAY. THIS TREMENDOUS INCREASE IN POPULATION DEMONSTRATES THAT THE THE CARIBOU IS AN EXTREMELY ADAPTABLE ANIMAL THAT CAN CO-EXIST WITH OIL DEVELOPMENT IN THE ARCTIC. THERE IS NO REASON TO BELIEVE THAT THIS EXPERIENCE WILL NOT BE REPEATED IN ANWR.

NO DESTRUCTION OF LANDSCAPE--NO IMPACT FROM EXPLORATION

WILDERNESS PROPONENTS WOULD ALSO HAVE US BELIEVE THAT AUTHORIZING OIL AND GAS LEASING ON THE COASTAL PLAIN WILL DESTROY THE LAST REMAINING ARCTIC ECOSYSTEM ON EARTH. ONCE AGAIN, THEY IGNORE THE FACTS. FIRST, THE AREA MUST BE EXPLORED FOR OIL AND GAS DEPOSITS. THE OIL INDUSTRY HAS PROVEN THAT EXPLORATORY DRILLING CAN BE DONE IN THE WINTER WITH NO IMPACT ON THE LAND OR THE ENVIROMENT. IF NO COMMERCIAL QUANTITIES OF OIL ARE FOUND, THAT IS THE END OF THE PROCESS AND THERE WILL BE NO FOOTPRINT WHATSOEVER ON THIS AREA.

MINIMAL FOOTPRINT FROM FULL DEVELOPMENT

ON THE OTHER HAND, IF COMMERCIAL QUANTITIES OF OIL ARE FOUND, THE RESULTING FOOTPRINT WILL BE NEGLIGBLE--PARTICULARLY IN COMPARISON TO THE SIZE OF THE OVERALL REFUGE. IF THE ENTIRE COASTAL PLAIN IS DEVELOPED FOR PRODUCTION--A HIGHLY UNLIKELY SCENARIO--ONLY 12,500 ACRES OF LAND WILL BE DIRECTLY AND INDIRECTLY IMPACTED. THIS IS MADE POSSIBLE BY THE ADVANCED TECHNOLOGY USED BY THE INDUSTRY IN THEIR ARCTIC OPERATIONS. FOR EXAMPLE, THE ENDICOTT FIELD, THE TENTH LARGEST OIL FIELD IN THE UNITED STATES, PRODUCES OVER 110,000 BARRELS PER DAY FROM TWO DRILL PADS COVERING ONLY 60 ACRES.

FOOTPRINT IN PERSPECTIVE--19 M. ACRES/8 M. ACRES/1.5 M. ACRES

IT IS HELPFUL TO PUT THESE FIGURES IN PERSPECTIVE. THE ARCTIC NATIONAL WILDLIFE REFUGE CONTAINS NEARLY 19 MILLION ACRES. OF THAT TOTAL, 8 MILLION ACRES IS DESIGNATED AS WILDERNESS. THIS 8 MILLION ACRES INCLUDES 450,000 ACRES ON THE COASTAL PLAIN. THE 1.5 MILLION ACRES UNDER CONSIDERATION FOR LEASING--THE SO-CALLED "1002" AREA--IS PART OF THE 9 MILLION ACRES OF REFUGE WHICH IS NOT WILDERNESS. IT IS ON THAT 1.5 MILLION ACRES THAT WE ARE TALKING ABOUT LEAVING A 12,500 ACRE "FOOTPRINT" UNDER FULL DEVELOPMENT.

HOW MUCH WILDERNESS IS ENOUGH

OR ANOTHER WAY TO LOOK AT IT: OF THE 19 MILLION ACRES IN THE REFUGE, 2 MILLION ACRES ARE ON THE COASTAL PLAIN--BETWEEN THE BROOKS RANGE MOUNTAINS AND THE BEAUFORT SEA. NEARLY 25% OF THE COASTAL PLAIN (450,000) ACRES HAS ALREADY BEEN DESIGNATED AS WILDERNESS. THE REMAINING 1.5 MILLION ACRES HAS BEEN IDENTIFIED AS THE MOST PROMISING OIL AND GAS PROSPECT IN NORTH AMERICA. IT IS THIS PROSPECT THAT S.1804 WOULD ADD TO THE 56 MILLION ACRES OF WILDERNESS ALREADY IN ALASKA. ONE HAS TO ASK, ARE WE SO LACKING IN WILDERNESS THAT WE NEED TO DESIGNATE THIS AREA AS WELL? OR, ARE WE SO RICH IN ENERGY RESERVES THAT WE CAN AFFORD TO LOCK UP THIS AREA?

NORTHEAST CORRIDOR INCONSISTENCY

FINALLY, MR. CHAIRMAN, I MUST EXPRESS A CERTAIN AMOUNT OF FRUSTRATION WITH MY COLLEAGUES WHO HAVE SPONSORED S.1804. IT IS INTERESTING TO NOTE THAT VIRTUALLY ALL OF THE CO-SPONSORS OF THIS

BILL ARE FROM THE NORTHEAST PORTION OF THE UNITED STATES. IT IS ALSO INTERESTING TO REFLECT THAT THE NORTHEAST IS THE AREA WHICH RELIES THE MOST HEAVILY ON IMPORTED OIL. AND, MANY OF THE SAME MEMBERS WHO WOULD DESIGNATE ANWR--OUR MOST PROMISING DOMESTIC PROSPECT FOR OIL AND GAS--AS WILDERNESS, ALSO OPPOSE MANY OTHER MEASURES DESIGNED TO ENHANCE OUR ENERGY NATIONAL SECUIRTY.

ENERGY CRISIS

WE HAVE AN ENERGY CRISIS IN THIS COUNTRY, ALTHOUGH FEW PEOPLE CHOSE TO RECOGNIZE THE FACTS:

* 15,000 U.S. SERVICEMEN ARE PROTECTING THE WORLD'S ENERGY RESOURCES IN THE PERSIAN GULF, WHICH CONTAINS 70% OF THE NON-COMMUNIST WORLD'S PROVEN OIL SUPPLIES. THEY'RE PREPARED TO MAKE THE ULTIMATE SACRIFICE TO KEEP THE SEALANES OPEN FOR ENERGY COMMERCE--FOR ENERGY RESOURCES THAT THE CITZENS OF THE NORTHEAST CORRIDOR DESPERATELY DEPEND UPON.

* AT THE SAME TIME, THE OPEC NATIONS HAVE DEVISED AN EQUILIBRIUM IN OIL PRICES AND OIL PRODUCTION THAT IS DESIGNED TO KEEP THEIR OIL DOLLARS FLOWING, WHILE STIMULATING CONSUMPTION AND DEPRESSING OUR ABILITY TO PRODUCE OIL FROM MARGINAL FIELDS.

* WHILE ALL THIS IS HAPPENING, OUR TRADE FIGURES SHOW THAT OIL IMPORTS HAVE NOW BECOME THE SECOND LARGEST SOURCE OF OUR GROWING TRADE IMBALANCE. IN THE LAST YEAR ALONE, CRUDE OIL IMPORTS INCREASED BY NEARLY 14% WHILE DOMESTIC PRODUCTION DROPPED BY OVER 5%.

* WE CAN'T CONTROL PRICES AND LOW OIL PRICES HAVE DEALT THE U.S. OIL INDUSTRY A SEVERE BLOW. DRILLING ACTIVITY HAS DROPPED FROM OVER 70,000 WELL COMPLETIONS PER YEAR TO 37,000, AND THE BASIC INFASTRUCTURE OF THE U.S. INDUSTRY, INCLUDING SKILLED PERSONNEL, IS SHRINKING.

* AND WE HAVE IRAN AND IRAQ ENGAGED IN AN ACTIVE GULF WAR.

THESE FACTORS SPELL CRISIS.

YET, THERE ARE THOSE IN CONGRESS WHO DON'T WANT US TO EVEN LEARN IF THERE ARE OIL AND GAS RESERVES IN THE ARCTIC.

TO LOCK AWAY THE COASTAL PLAIN OF ANWR NOW, WITHOUT KNOWING WHAT'S THERE, IS IRRESPONSIBLE.

IN CONCLUSION, I WOULD LIKE TO REMIND THE COMMITTEE OF THE SENATE VOTE SEVERAL YEARS AGO THAT CLEARED THE WAY FOR THE TRANS ALASKA PIPELINE TO BE BUILT. THAT MEASURE PASSED BY ONE VOTE--CAST BY THE VICE PRESIDENT. WITHOUT THAT PIPELINE, THIS COUNTRY WOULD BE UNABLE TO USE THE BILLIONS OF BARRELS OF OIL IN THE PRUDHOE BAY AREA. IN OTHER WORDS, THE SENATE CAME WITHIN ONE VOTE OF DENYING TO THE CONSUMERS OF THIS COUNTRY 25% OF OUR CURRENT DOMESTIC OIL PRODUCTION.

MR. CHAIRMAN, I DO NOT WANT THAT SITUATION TO HAPPEN ON ANWR.

TESTIMONY OF
ROBIE G. RUSSELL
REGION X
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE
COMMITTEE ON ENVIRONMENT & PUBLIC WORKS
U.S. SENATE

DECEMBER 10, 1987

Good afternoon, Mr. Chairman and Members of the Committee. I am Robie G. Russell, Regional Administrator of Region 10, U.S. Environmental Protection Agency. Accompanying me today is Alvin L. Ewing, my Assistant Regional Administrator for Alaska Operations. We are here today at your request to discuss EPA's comments on the Department of the Interior's Legislative Environmental Impact Statement (LEIS) concerning the proposal to authorize oil exploration and possible development and production within the Arctic National Wildlife Refuge (ANWR) established by section 1002 of the Alaska National Interest Lands Conservation Act; and to discuss present hazardous waste and water quality impacts at existing oil development sites on the North Slope.

EPA's involvement with this subject commenced with a review of the draft LEIS. In a February 6, 1987 letter to the Department of the Interior, we raised a number of significant concerns regarding the draft LEIS and rated A, B, and C using EPA's standard rating scheme. Our ratings were as follows:

- Alternative A (full leasing of 1002 area of ANWR for oil exploration, development and production): EO-2 (Environmental Objections - Insufficient Information)
- Alternative B (limited leasing - approximately half of the 1002 area of ANWR would be available for oil exploration, development and

production; the other half would be off-limits for oil related activities): EC-2 (Environmental Concerns - Insufficient Information)

- Alternative C (additional oil exploration, including exploratory drilling throughout the 1002 area of ANWR.): LO (lack of objection)

In accordance with our statutory responsibilities under section 309 of the Clean Air Act, EPA also reviewed the final LEIS and provided comments to Interior in a June 1, 1987 letter. Our review indicated that, while the document was responsive to several of the concerns raised in the February 6, 1987 letter, others were not addressed to our satisfaction in the final LEIS. For example, a change made in Alternative B (limited leasing) increased our concern to the same high level as for Alternative A (full leasing). That change was the major reduction in caribou calving areas and an associated increase in the wildlife habitat area which would be subject to leasing and subsequent development and production activities.

There were a number of meetings during the summer months between EPA and Interior. Two issues have been resolved to the mutual satisfaction of both agencies, and we continue to address others.

Significant issues which have been resolved include the following:

1. We agree with Interior that the purpose of the LEIS currently before Congress is to serve as a basis for the major public policy decision that Congress faces--whether ANWR should be opened in part or in whole for oil exploration, development and production.
   Further, it is clear that if the decision of Congress is to open ANWR, NEPA compliance will be achieved at each stage of leasing and develop-

ment to assist in the environmental decision-making process. EPA understands that Interior proposes to use such a tiered EIS process for any oil leasing and development in ANWR.

2. EPA now understands that it was and is Interior's intention that all existing environmental laws will apply to ANWR. Talks with Interior have clarified language in the LEIS which EPA believed left open the possibility of some modification of environmental laws as they apply to ANWR.

Significant issues for which resolution is possible include:

1. Air Quality - The LEIS contained ambient air quality data gathered during 1979 and 1980 before much of the North Slope oil development had occurred. Newer data gathered during 1986 and 1987 are now available. Neither the 1979-80 data nor the new data indicate violations of the National Ambient Air Quality Standards. In fact, maximum readings for nitrous oxide (NO_x), the primary pollutant of concern, are only 20% of the existing standard. However, Prevention of Significant Deterioration (PSD) permitting is based on modeling a particular project's worst-case emissions. Industry modeling data project NO_x levels under worst-case analyses to be 30% below the current National Ambient Air Quality Standard. In response to a court order, EPA is currently developing an increment program for NO_x which in effect will require a more stringent standard and thus require tighter emission controls for North Slope development. PSD permits for NO_x sources consequently may be more difficult to obtain.
2. Water and Gravel Supplies - As pointed out in the draft LEIS, fresh water sources and gravel supplies are relatively scarce in some parts

of the 1002 area of ANWR, but Interior has informed us that adequate sources are available elsewhere. The existing fresh water sources that could provide the needed volumes of water and are deep enough to avoid freezing in cold weather periods generally also provide critically important over-wintering habitat for fish. Most of the known gravel sources, according to the LEIS, occur in or adjacent to stream channels. Interior maintains that it is possible to acquire adequate volumes of fresh water and gravel through a variety of means. This issue can be resolved by simply identifying the important fish habitat areas and insuring that they are not utilitized as water or gravel sources for oil development.

3. Marine Transportation Facilities - EPA's continuing high level of concern regarding the impact of causeways on anadromous fish in Prudhoe Bay is further elevated by the prospect of other such facilities offshore from the 1002 area. The LEIS's recommended mitigation measure is to construct docks and causeways so that fish movements are not impeded and lagoon water chemistry is basically unchanged. Accomplishment of this mitigation as described, through use of alternatives such as pile-supported causeways or subsea pipelines, would eliminate the basis for EPA's concern.

4. Protection of Caribou Calving Areas - EPA's comments on this topic were directed at use of available data and the narrowness of the range of alternatives provided. We have been informed Interior that Alternative B, as presented in the final LEIS, was intended to be an example of a limited development alternative. In other words, other limited development options are possible and could be tailored to minimize any adverse effects on the Caribou population.

You have also asked for our testimony regarding water quality and hazardous waste impacts from existing oil development on the North Slope.

Water Quality

1. Eighteen offshore facilities are regulated under the Beaufort Sea General Permit. The permit prohibits discharge of oil-based muds or diesel fuel and requires approval of muds and additives prior to use as well as monitoring and analysis of free oil, muds, and cuttings.
2. Nearshore activities are regulated by individual permits. Permittees are required to monitor effluent and receiving water quality, sediment quality, and benthic impacts. Except for isolated spills, the permitted offshore and nearshore facilities have generally operated in compliance with permits, and discharges have not resulted in unacceptable impacts.
3. While ANWR development will likely result in discharges similar to those in the Prudhoe Bay area, topographical differences may result in different impacts. In ANWR, the terrain slopes more steeply to the shoreline and beyond to the sea. It is therefore likely that marine discharges will dilute and disperse more easily than they do in the shallower Prudhoe Bay waters. Fewer lakes and streams in ANWR mean relatively less fresh water is available. A greater level of desalinization would likely be needed and the matter of briny discharges will have to be addressed. Fewer lakes and streams means fewer surface waters are available to receive wastewater discharges.

Hazardous Waste

Virtually all of the approximately 50 million barrels of liquid waste generated on the North Slope currently qualify for a RCRA exemption as "drilling fluids, produced waters, and other wastes associated with the

exploration, development, or production of crude oil, natural gas or geothermal energy" [40 CFR 261.4(b)(5)]. Those wastes classified as hazardous were previously disposed of through deep well injection. However, the injection well is no longer available for hazardous wastes and they are now being transported out of State for disposal. The high cost of this transport has resulted in significant waste minimization, recycling, reuse, and product substitution. Standard Alaska has applied for a UIC Class I permit for the Endicott field to dispose of on-site generated hazardous waste.

EPA meanwhile is studying the "associated waste" exemption. We will soon be submitting a report to Congress with recommendations as to how these wastes should be regulated.

Probably the most significant hazardous waste problems on the North Slope are caused by support industry activities. While larger companies tend to be more knowledgeable and responsible about adhering to regulatory requirements, some smaller firms have been less conscientious. Cleanup and disposal then becomes a task for Federal and State agencies and the oil companies after the contractor disappears or declares bankruptcy.

In conclusion, the issues which have been highlighted are environmentally significant. EPA's regulatory mission does not preclude the development of resources in ANWR, but requires our review to ensure the protection of the environment. EPA will continue to work closely with the Department of the Interior to resolve the remaining issues which I have highlighted.

With that, I conclude my formal remarks and will be pleased to answer any questions members of the Subcommittee may have.

TESTIMONY OF MARGARET A. MORAN
BEFORE THE SENATE SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION
December 10, 1987

Mr. Chairman and members of the Subcommittee:

My name is Margaret A. Moran. I am the special assistant for the Arctic National Wildlife Refuge (ANWR) to Governor Steve Cowper of Alaska. I want to thank you for the opportunity to present the views of the State of Alaska on federal management of the coastal plain of the Arctic National Wildlife Refuge.

The State of Alaska strongly supports federal legislation to open the coastal plain of ANWR to oil and gas exploration and development, consistent with appropriate environmental stipulations. We cannot support proposals to designate this area, the most prospective oil and gas frontier left in North America, as wilderness.

Located in the northeastern corner of Alaska, ANWR comprises 19 million acres. The only area that would be open to oil and gas activity is the 1.5 million acre coastal plain, 8 percent of ANWR. However, according to the Interior Department, only 12,000 acres (less than 20 square miles) is likely to be affected by development. This area comprises only 0.8 percent of the coastal plain and 0.06 percent of ANWR.

Although there has been much debate about designating ANWR lands as wilderness, it should be noted that 42 percent of ANWR (8 million acres) is already established as wilderness. Included in this wilderness are 450,000 acres of the coastal plain and 30 miles of coastline. The 450,000 acre coastal plain wilderness adjoins Canada's 3 million acre Yukon National Park.

The State concurs with the Department of the Interior's Final 1002 report findings that the coastal plain area represents the most outstanding oil and gas frontier remaining in the United States. It has been clearly demonstrated by federal, state and independent investigators that the coastal plain (or 1002) area could yield Prudhoe Bay-sized quantities of petroleum.

The estimates are that if oil is discovered beneath the coastal plain, there is a five percent probability of finding between 26.5 and 29.4 billion barrels of oil. This compares favorably with the 23.5 billion barrels initially in-place at Prudhoe Bay. For perspective, it is noteworthy that prior to drilling, some industry officials estimated that there was only a 2 percent probability that the Prudhoe Bay area contained as much as 2 billion barrels of oil. Today that area accounts for more than 20% of our domestic production.

All of the key geologic elements necessary for major hydrocarbon accumulations exist beneath the 1002 area. Oil seeps, oil-stained reservoir rocks and excellent quality petroleum source rocks are present. Large subsurface structures and traps have been mapped from seismic data. The federal 1002 report documents 26 of these large, prospective structures beneath the surface of the coastal plain. In addition, the 1002 area lies between the huge discoveries at the Prudhoe and Kuparuk oil fields to the west, and the Canadian Mackenzie Delta field to the east.

In our opinion, development of ANWR's petroleum potential is in the national interest. We have just recently produced the five billionth barrel of Prudhoe Bay oil. This means that one-half the total proven 10 billion barrels of recoverable oil have been produced and that the largest field in North America, will begin a precipitous production decline in the near future. By the year 2000, Alaska's yearly production will have dropped to approximately 386 million barrels per year from today's rate of 685 million barrels per year.

In 1973, when the Arab oil embargo caused such severe economic dislocation, the U.S. was only 35 percent dependent on imported oil. Today, the U.S. is approximately 45 percent dependent on such oil. By the early 1990's, imported oil will account for over 50 percent of domestic demand. Prudhoe Bay, which currently accounts for 20 to 25 percent of all U.S. oil production, will begin to decline in the near future. This oil must be replaced by more domestic production or by imports.

Production from the ANWR coastal plain could help to significantly offset the expected decline. Industry experts place the range of potential U.S. domestic production by the year 2000 at between 4.5 million and 6.4 million barrels per day, substantially less than the current 8.3 million barrels per day. These quantities would satisfy between 24 percent and 37 percent of projected domestic consumption.

Notwithstanding the nation's need for more energy, the State of Alaska believes that oil and gas development must proceed in an environmentally sound manner. There has been much attention focused on waste management and on protecting the 180,000 animals in the Porcupine Caribou Herd which are present on the coastal plain for 6 to 8 weeks each summer.

The Porcupine Caribou Herd is one of 28 caribou herds in Alaska and one of four herds found on Alaska's North Slope. Wildlife biologists have concluded that a 242,000 acre area is especially important for reproduction of the Porcupine Herd. The state is confident that if this area receives special attention and if appropriate stipulations are in place for the remainder of the coastal plain, then oil and

gas exploration and development can proceed in ANWR while adequately protecting the Porcupine Caribou Herd.

Equally important to the environment is the manner in which development and production wastes would be disposed of. Time and experience with waste management in the Arctic over the last 20 years have provided vastly improved technology and management techniques. The state believes that the track records of both the industry and the government regarding development and the regulation of development on the North Slope provide a good foundation for opening ANWR to responsible oil and gas development, and we can assure you that Congress has at its disposal the technology and the regulatory tools necessary to protect the coastal plain's environment.

An essential element of any approach to mitigating impacts on fish and wildlife, as well as protecting the area's environmental quality, is cooperation between the federal and state governments and the industry. To this end, we believe that Congress should establish a joint state/federal interdisciplinary team to oversee and participate in project planning, project design review, permit actions, field monitoring and compliance. Similar joint state/federal teams have been used successfully in Alaska for large scale development projects such as the Trans-Alaska pipeline system (TAPS) and the preconstruction phase of the Alaska Natural Gas Transportation System (ANGST).

The State's comments to the Secretary of the Interior on the Draft 1002 report contain additional recommendations that the Committee may find helpful. Our comments suggest ways to mitigate development impacts on the Porcupine Caribou Herd. They also recommend a responsible approach for conserving other wildlife and fisheries resources in and adjacent to ANWR. And finally, they look at waste stream management issues and suggest mitigation measures. With the Chairman's permission, I will submit these comments to the committee. Additionally, representatives from the State have testified on different aspects of the proposed development of ANWR before the other Congressional committees with jurisdiction. Again, with the Chairman's permission I will submit their testimony and supporting documents for the record.

In summary, the coastal plain has the tremendous potential to contribute to this Nation's economic strength and energy security. If we begin now, legislation can be passed that will open the area to exploration, development and production. At the same time, Congress can provide for the environmental measures necessary to protect and preserve the natural resources in the area. The State of Alaska strongly supports the opening of the 1002 area. We look forward to working with you and your staffs as you consider this important issue.

TESTIMONY OF

ROGER C. HERRERA

MANAGER OF EXPLORATION AND LANDS

STANDARD ALASKA PRODUCTION COMPANY

ANCHORAGE, ALASKA

BEFORE THE

SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

THURSDAY, DECEMBER 10, 1987

Mr. Chairman:

My name is Roger Herrera and I am testifying before you today on behalf of the Standard Alaska Production Company with whom I am employed as Manager of Exploration and Lands. Standard Alaska Production Company is a subsidiary of BP America and is the major producer of crude oil from the State of Alaska. I personally have been directly involved with exploration for oil and gas in Alaska and other arctic regions for almost 20 years.

My comments today are directed at what may happen on the coastal plain of the Arctic National Wildlife Refuge (ANWR) if oil and gas development is allowed to proceed in a rational fashion in the area. In particular, I will concentrate on the nature and timing of practical work in the area, and on mechanisms that will be used to protect the environment both by means of existing law and regulation, and as a result of industry's long practical experience learned from 27 years of exploration and oil production on the North Slope of Alaska.

It is perhaps superfluous to state that the Standard Alaska Production Company and all other industry operators in the arctic regions of Alaska are totally opposed to the terms of Senator Roth's bill (S.1804) under consideration by this committee, yet we are all uniformly and totally supportive of the concept of maximum environmental protection of the coastal plain compatible with the requirements for practical exploration and development of the area. Further, we believe that the biological record in the Prudhoe Bay-Kuparuk region of healthy maintenance or increases in animal and plant populations justifies our position that national benefits from hydrocarbon development in ANWR can be enjoyed without detriment to the biota of the region.

NOTE: Attachments to this statement have been retained in committee files.

Physical effects caused by oil activities vary considerably during each phase of activities. For example, the impact of exploration work is quite different from that of delineation drilling after a discovery, or from the construction phase when a commercial oilfield is being prepared for production, or the final long-term production phase itself. Different protective techniques are required during these phases and this has been recognized in existing law to an exemplary extent.

Exploration Phase

There are several aspects worth mentioning which have been common to exploration drilling programs in the arctic historically, and will govern any future exploration allowed on the coastal plain of ANWR. These include the utilization of logic to determine when and where exploration activities would be carried out. The romance and hunches of the old wildcatter have no place in the arctic where wells cost $20 to $60 million each to drill, and a seismic program might cost $50 million. There is only one way to look responsibly for oil and that is to be gathering enough geological and geophysical information to establish where the most prospective targets are situated and then drilling the best targets first. Only in that way are the odds of finding a commercial accumulation reduced to reasonable proportions.

The other philosophies which govern exploration are those of safety, above all else, plus a conservative patience which translates into making haste slowly. The safety ethic is perhaps illustrated by the differences in the time taken to drill a 10,000 foot well in the Prudhoe Bay field versus an exploration well being drilled into what is believed to be similar geology in an area where less is known about the subsurface strata.

The Prudhoe well would be completed in total depth in about 18 days, the similar exploration well would take about 90 days to reach the same depth. The cost difference between the two wells would be $3 million compared to more than $20 million.

A vigorous exploration drilling program on the coastal plain can be expected to consist of two or three wells per year. Such a rate of activity is quite normal in the arctic. It is dictated by cost, geology and seasonal considerations. Costs are obviously very high, as are the financial risks. Consequently, oil companies will combine into bidding groups to participate in an ANWR lease sale rather than bid alone as individual entities. Each group will choose an operator to carry out exploration and therefore, although 20 to 30 companies may become lease owners on the coastal plain, the number of operators would be very small.

The nature of the geology of the coastal plain, although very favorable, is very complicated. Our understanding of it is based on 1200 line miles of seismic. At best, this gives a general picture of what is happening to the rocks beneath the surface but hardly one detailed enough to justify drilling a $50 million well whose objective is to find oil. Such an investment demands more detailed site specific data to justify it. That data can only be obtained by carrying out more seismic surveys in the area of interest. It is reasonable to suggest that all operators of ANWR leases will need to shoot new seismic data on their leases prior to initiating a drilling program.

This need brings into consideration seasonal restrictions. By choice, industry preferentially selects the winter time for most arctic exploration activities. The frozen environment makes transportation problems much easier and cheaper, and enhances environmental protection. However, winter

operations have their own drawbacks. In practical terms, activities are only carried out from about Christmas to late April--or one third of the year. The other eight months are wasted or used to satisfy bureaucratic permitting procedures. A seismic survey which is completed by the end of April in a given year, (year two of a lease; the first year is used for planning and permitting), has to be processed and analyzed and the results are not available until the fall of that year--too late to be used for any operational activities the following winter. Such activities inevitably require a minimum of six months of permitting before they can be started. Thus, seismic results obtained in year two might allow a well to be located and drilling in year four. The results of that well (assuming it took only one winter to drill) could not be used to site a follow-up well until year six.

Exploration is a slow and patient game. It cannot be rushed and it cannot be done illogically or unsafely.

Initial wells in a new area are drilled for two objectives--first to find oil, and second, to obtain as much new geological information as possible. This second requirement often mandates drilling the well to "basement", which is a level, usually deep, below which no oil can be preserved. Deep wells often take two winter seasons to drill which further slows the process. Similarly, the vast amount of testing which initial wildcat wells are subjected to, all in the quest of obtaining new data, takes a great deal of time and makes it difficult to complete such wells in one season.

Given this slow and careful process, how long will it take to find a commercial oil field in ANWR? Experience elsewhere suggests--unfortunately--that the first wells rarely find the hoped-for

fields. There is no doubt that the geology of the coastal plain is highly complex and it is unlikely to yield its major secrets before 20 or 30 exploration wells have been drilled. There is nothing unusual about that, and so long as industry is given a little encouragement both from the geology and from the ANWR legislation, the area will be adequately explored.

Delineation Phase

Almost as important as the exploration phase and its objective of finding oil, is the post-discovery phase which occupies the period of time between exploration and production. The first characteristic of the post-discovery phase of arctic oilfields has been the long time period which inevitably elapses before production to market is initiated. With the single exception of the Prudhoe Bay field, that time period has been extended by the fact that the discovery well of the other fields has not conclusively confirmed the commerciality of the new found oil accumulation. For example, the Kuparuk Field, which is presently the second largest oilfield in the United States and had original producible reserves of 1.45 billion barrels of oil, required the drilling of 20 step-out, or delineation, wells before the size of the field was firmly established and its producibility characteristics understood sufficiently to forecast the economics of production from the field. The initial discovery of the field was made in 1969 and first production of oil occurred in 1982--13 years later. That long period of time was mainly a product of the geology and economics of the oil reservoir. Despite the large volume of oil in the Kuparuk sandstone formation, the relatively thin reservoir and the fact that it is spread out over a wide geographical area made development and operational costs and techniques difficult to determine. This delayed the

decision on its commercial profitability by many years. Incidentally, it is worth repeating that the Kuparuk oilfield would undoubtedly still be undeveloped but for the fact that it was able to utilize the already existing Trans-Alaska Pipeline System. Without that, its economics would still be unfavorable.

It may be five to ten or more years after an initial lease sale before a decision is made to develop a commercial oil discovery. Up until that time most, if not all, the activities would take place in the winter time and standard mitigating measures would have been used to protect the Arctic environment. Such things as seasonal restrictions of certain activities should be used routinely, but their benefits need to be rigorously examined. No one should lose sight of the desired goal if the coastal plain is opened. That goal is the safe production of oil and gas to the benefit of the nation without detriment or damage to the environment. It is easy to become overly conservative in the desire to protect the environment to the extent that it becomes unjustifiably difficult or impossible to produce oil economically. Seasonal drilling restrictions in the exploration phase can double the cost of a well from $25 million to $50 million $\pm$ in ANWR. If those restrictions do not benefit the caribou or other animals they are designated to protect, they should be modified or dropped. Such a process occurred offshore to protect the Bowhead Whale. The restrictions were modified as their benefit, or lack thereof, became understood.

There appears to be a growing philosophy to indulge in over-protection of the environment of the coastal plain; that quickly becomes of no benefit to the environment and is detrimental to drilling. A typical example is the 500 foot set back required for a drill pad or facility from the high

water mark of specified water courses. This serves to protect both the facility and the stream or river, and such setbacks have been routine and effective on adjacent state acreage. We now learn that the Department of the Interior is proposing in the final 1002 report to increase the setback eightfold to 4,000 feet in ANWR. This would increase the cost of wells drilled from such locations by millions of dollars but will add nothing to the protection of the environment.

The legal and regulatory processes which apply to exploration and delineation activities are described in some detail in Appendix 1 of this testimony. Two points are worth stressing. One, no permanent facilities are involved in any of these actions with the possible exception of construction of an occasional gravel drilling pad. Secondly, the degree of agency oversight of every proposed action is remarkable for its thoroughness and triplication by local, state and federal governments. Furthermore, the protective rules are constantly evolving as new information and better techniques become available. Every innovative protective mechanism developed by industry has instantly become a mandatory process to the extent that it is very difficult to propose further environmental stipulations which actually enhance protection. At that level of control, the attitude of the operators in the field who are ultimately responsible for complying with the regulations becomes the dominant consideration. This attitude is invariably positive as the record shows. Only individuals who genuinely like the arctic can tolerate its harshness and discomfort. They are highly trained and are justly proud of their accomplishments. And they are aware of the fact that it is much more expensive and difficult to rectify a mistake in the arctic than it is to

prevent the error happening in the first place. In other words, there is a lot of self interest involved to ensure environmental protection.

The environmental "footprint" left behind from the exploration and delineation phases should be, and in the past has been, negligible. Gravel drilling pads used for abandoned wells generally have been left in place because it causes more environmental disturbance to remove the pad than to leave it as a useful mini-environment which has a positive function (for example, as an insect relief oasis for caribou). In the past, efforts have been made to revegetate these pads and the botanical processes to achieve that are now well known. However, little or none of the terrestrial habitat in the arctic is anywhere close to its species carrying capability. Consequently, a surfeit of most habitats is present. It is not, therefore, crucial that the tiny acreage of tundra covered by gravel be expensively renovated back to its original state. Aesthetically, that might be desirable but it is not biologically beneficial.

Development and Production

In many respects, the Endicott Oil Field, situated 15 miles northeast of Prudhoe Bay and three miles offshore in the shallow waters of the Beaufort Sea, best exemplifies the "Arctic norm" for the development phase of an oilfield after discovery and before production. It was first discovered by the Sag Delta #4 wildcat well in early 1978 and came on stream with initial oil production in October this year, almost 10 years later.

The drilling of the eight delineation wells had supplied enough information to make a decision on the development of the field by 1981 and early the following year the first of over 2300 lbs. of paperwork was submitted to the Army Corps of Engineers to trigger off a full scale

environmental impact statement and subsequent permitting procedures. The EIS and permitting took the involved thirteen agencies three years to complete and in January, 1985, permission to proceed with the construction and development stage of the field was given. Twenty-five major permits were required and every aspect of the future field was examined, analyzed and individually subjected to operational stipulations.

During that three year permitting phase, the operator was busy amassing detailed physical and biological data. This was used to finalize the construction plans for the field, but such environmental research and monitoring continued during the actual construction phase. Approximately $8 million a year is spent on the gathering of new data at Endicott. That level of work will continue into the future and a staggering amount of new environmental information is becoming available. It is an unfortunate fact that many of the benefits of such laudatory effort are being lost on dusty shelves or ignored because no government agencies are able to spend the time on appropriate analysis of the data.

This situation contains a lesson for ANWR. It is not sufficient merely to spend money or time on biological/environmental issues unless the effort is prioritized and focused, and results in some practical benefits. The problem both at Endicott and in ANWR is not lack of information but rather a lack of ability or opportunity to review and understand the information which is available. Over $20 million has been spent on fish research alone at Endicott, but no end to the work is in sight. One has to wonder who or what benefits from such a major scientific project.

It is fairly clear from this brief description of the exploration, delineation and development phases of an oilfield in the Arctic that several factors pertinent to ANWR need careful examination. These include:

1. Exploration is a long, slow, careful process with inherent financial risk. Operators need encouragement, not discouragement, to drill the number of wells needed to maximize the chances of a commercial discovery.
2. The delineation drilling phase can be extremely time consuming and ways of accelerating that phase, including year-round drilling, need to be considered.
3. The EIS decision process mandated by NEPA is extraordinarily thorough. It guarantees practical environmental protection in a new oilfield.
4. Scientific monitoring and environmental research are only meaningful if the data is used responsibly.
5. Operations stipulations can be counter-productive unless they allow new and improved technologies or ideas to be utilized. Stipulations are best expressed as performance standards rather than inflexible rules.
6. If statutory ANWR language is not all-encompassing and complete in its efforts to achieve total protection of the Coastal Plain, no one should be too concerned. The environmental impact statement and permitting experience at Endicott clearly indicates that the NEPA process works extraordinarily well, and, on a site specific basis, comes close to guaranteeing rational and acceptable development of an arctic oilfield. It points to the necessity of a development decision in ANWR being subjected to that administrative process, and illustrates how well existing environmental regulations work in the arctic regions.

Attached to this testimony as Appendix 2 are detailed position papers on subjects of environmental concern in ANWR. Included are explanations of mitigation techniques for eliminating those concerns including use of sand, gravel and fresh water resources, protection of air and water quality, a discussion on the disposal of drilling wastes and other non-hazardous and hazardous wastes, and in-depth analyses of biological factors affecting birds, caribou, and other mammals. These scientific analyses are offered in an attempt to eliminate the non-factual emotion and bias which has so often intruded into the ANWR debate on environmental issues.

It is obviously your committee's responsibility, Mr. Chairman, to consider these environmental points and accurately assess the potential affects of oil and gas development on those natural resources. Many questions and concerns are answered in the Appendix 2 material. However, the final Congressional decision on the future of the coastal plain of ANWR must give equal weight to the economic, social and political problems of our nation's energy future.

A decision to lease ANWR now could result in huge positive benefits to everyone around the year 2002 when the first oil can be expected to reach market. In the interim, the benefits will be lesser ones but still worth having. They would include a wise utilization of the considerable cash bonus bids which would result from competitive leasing on the coastal plain, a great jump in arctic research including knowledge of the physical and biological environment, substantial nationwide business opportunities and jobs resulting from exploration in ANWR; and a better national understanding of the necessity for energy conservation and a lessening of reliance on foreign sources of oil.

None of those benefits are worth having if the arctic environment is spoiled. But despite the early mistakes made when the arctic was unfamiliar territory to us, it is reasonable to state that the development of the first and second and tenth largest oilfields in the United States in the vicinity of Prudhoe Bay has not measurably affected the biota of that area in any adverse manner. We assuredly will do an even better job in the future if ANWR is opened, therefore, your committee's decision can allow oil development and protect the arctic environment. The two are compatible and should be achieved.

Thank you for this opportunity to testify. I greatly appreciate your kind invitation.

STATEMENT OF

ERNEST J. CORRADO, PRESIDENT

AMERICAN INSTITUTE OF MERCHANT SHIPPING

BEFORE THE

ENVIRONMENTAL PROTECTION SUBCOMMITTEE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

DECEMBER 10, 1987

83-590 - 88 - 4

The American Institute of Merchant Shipping (AIMS) appreciates the opportunity to submit this brief statement for the hearing record concerning legislation relating to oil and gas leasing within the Coastal Plain of the Arctic National Wildlife Refuge (ANWR). AIMS is a national trade association representing 23 U.S.-flag shipping companies which own or operate approximately eight million deadweight tons of tankers, dry bulk carriers and other oceangoing vessels engaged in the domestic and international trades of the United States. As a representative of the vast majority of tankers involved in the carriage of crude oil from Alaska's North Slope (ANS), we strongly support S. 1217 to amend the Mineral Leasing Act of 1920 to authorize the Secretary of the Interior to lease, in an expeditious and environmentally sound manner, the public lands within the Coastal Plain of ANWR for oil and gas exploration, development, and production. We are opposed to S. 1804 which would designate the Coastal Plain of ANWR as wilderness and prohibit any development. We are certain that oil and gas development can be conducted in an environmentally sound manner. Our following comments address the positive aspects that oil production would have on the U.S.-flag tanker fleet, and the outstanding environmental safety record of the fleet.

Presently, most of the crude oil tankers under the U.S.-flag are engaged in the transportation of ANS crude oil. This crude oil is produced from existing fields in Alaska's Prudhoe Bay Area, and delivered via the Trans Alaska Pipeline (TAPS), to Valdez

Alaska, where it is loaded onto tankers and transported to the lower 48 states. U.S.-flag vessels must be used in this trade in accordance with the Jones Act which reserves domestic waterborne commerce for U.S. documented vessels. There are currently 65 tankers in the "TAPS" trade.

On behalf of American tanker owners, we are proud of the outstanding environmental record established by our ships in transporting Alaska North Slope (ANS) crude oil to markets on the mainland. We believe this record should be used in assessing the environmental impacts of the continued carriage of ANS crude and the carriage of ANWR oil when and if developed.

Set out below are some salient facts indicating the excellent safety and environmental record of petroleum transportation by U.S. tankers in the domestic trades.

- The Port and Tanker Safety Act of 1978 has been implemented, requiring segregated ballast tanks, crude oil washing systems and inert gas systems on all tankers over 20,000 DWT, as well as numerous other improvements.

- The reliability of shipboard equipment has been greatly improved in recent years with the advent of satellite-assisted navigation, improved radar, and redundant steering mechanisms.

- The implementation of MARPOL '78 insures that discharges at sea do not occur, and that adequate waste reception facilities are provided.

- In three years (1981-1983), one of our largest operators lifted 45 million barrels of crude by tanker from Santa Barbara Channel spilling only one gallon.

- In the first seven years that the Trans-Alaskan Pipeline System (TAPS) was opened, tankers moved over three billion barrels of crude oil out of Valdez. Approximately 200 barrels have been spilled, which is equivalent to 67 barrels per billion barrels of oil shipped and a large portion of the amount spilled was recovered. No adverse environmental impact has been noted.

- Tankers have been transiting Santa Barbara Channel for well over 80 years. To our knowledge, no significant spills involving permanent environmental damage have occurred.

- One large oil company reports no spills since the inception (in the mid 1970's) of lightering operations in the U.S. Gulf from large (VLCC or ULCC) tankers to small tankers. Over 600 lighterings have occurred; these operations are far more difficult than loading from a single anchor leg mooring (SALM).

At present, there are somewhat less than 10 million DWT of tankers active under the U.S. flag. About 70% of this total is employed in the distribution of ANS crude. These tankers form a vital part of the merchant marine which the U.S. can call upon in time of war or national emergency to carry petroleum products. Fortunately, the ANS crude market at this time is supporting these vessels and the manpower base necessary to run the ships.

However, as shown in the attached chart, when the production in the Prudhoe Bay oil fields declines, vessels will be forced out of this trade with little prospect of finding cargoes elsewhere. The vessels would be laid up and, unless there is a reasonable expectation of production in ANWR, most will be scrapped, which will result in an exacerbation of an already acute shortage of militarily useful tankers. We would add that lay up status does not guarantee that competent crews will be readily available if it becomes necessary to break the vessels out for an emergency. Approximately 50% of the tanker manpower base is found on the vessels transporting ANS crude. A commercial market which utilizes ships is the only guarantee that ships and men will be available when needed for the national defense. A continued use of the TAPS systems by directing any oil found on the coastal plain into TAPS is a logical, environmentally sound method to proceed. TAPS and tankers have provided a safe method of transporting ANS crude and their use should be continued.

Other supporters of a decision to open the Arctic National Wildlife Refuge coastal plain to exploratory drilling and hopeful eventual development of oil fields will refer to the positive aspects of replacing the 20% of present domestic oil production represented by the Prudhoe Bay oil. To the considerable extent that this adds to the national security of the U.S., we add the very consequential benefits of keeping the major portion of the U.S. tanker fleet at work and available. This fleet operation provides major economic and national defense benefits for the United States.

In addition, supporters will show that oil can be produced on the Coastal Plain in an environmentally sound manner. I had the opportunity to visit the North Slope of Alaska and ANWR this past summer. I was convinced, by observing the operations at Prudhoe Bay, that the technology available will ensure that no adverse effects to the ecology, environment, and wildlife will result from oil production within ANWR.

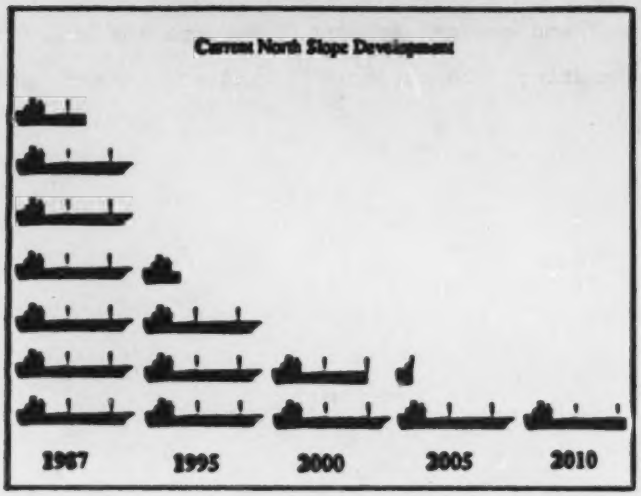
The alternative to the development of ANWR is really unacceptable because, among other things, it would result in the idling and subsequent destruction of the existing infrastructure (tankers, the Trans-Alaskan Pipeline, etc.). This would be an unjustifiable waste in any circumstance, but especially in these days of emphasis on conservation of resources and on U.S. productivity.

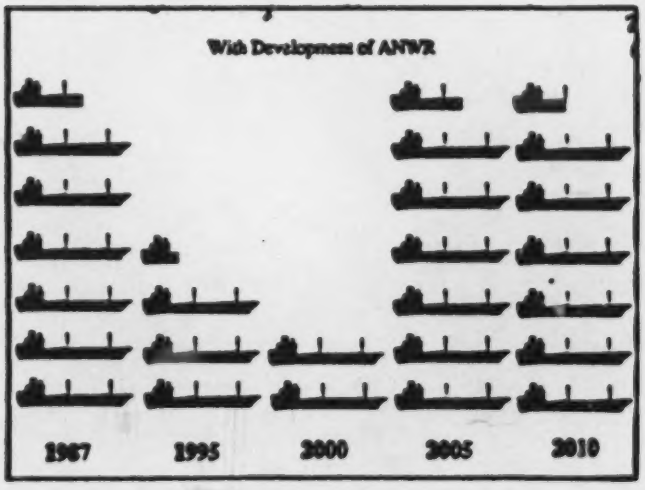
We appreciate this opportunity to comment for the record and strongly support opening the coastal plain, representing 1.5 million acres of the 19 million acre Arctic National Wildlife Refuge, to oil and gas development. We urge the Subcommittee to oppose designating the area as wilderness and prohibiting development.

ATTACHMENT

CRUDE OIL TANKERS IN NORTH SLOPE TRADE

All tankers in North Slope Trade are U.S.-Flag Ships





represents 10 tankers in North Slope trade

STATEMENT

of the

AMERICAN PETROLEUM INSTITUTE

submitted to the

SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

UNITED STATES SENATE

Hearing
on
S. 1804

December 10, 1987
Hearing Record

The American Petroleum Institute (API) is a national trade association comprised of some 200 companies and more than 5,000 individuals engaged in petroleum exploration, production, transportation, refining and marketing in the United States.

API is opposed to enactment of S. 1804, the proposed legislation to designate the Arctic National Wildlife Refuge (ANWR) coastal plain as a wilderness area. At a time of heavy U. S. dependence on oil imports and continued warfare in the Persian Gulf, it makes no sense to block critically important efforts to find and develop more domestic oil and natural gas resources to meet future U. S. energy needs.

As mandated by Section 1002 of the Alaska National Interest Lands Conservation Act, the U. S. Department of the Interior (DOI) assessed the oil and gas potential of the coastal plain. After 5 years of study and analysis, DOI recommended that Congress open the coastal plain to leasing. The department's final report, issued in June 1987, stated that the 1002 area is "the nation's best single opportunity to increase significantly domestic oil production ... [and] ... is rated by geologists as the most outstanding exploration target in the onshore United States."

This vast potential will remain untapped unless Congress acts to permit oil and gas leasing. Enactment of S. 1804 will deprive the nation of oil and gas resources which, if utilized, could make a significant long-term contribution to reducing U. S. oil import dependence, which already has increased markedly. In

1986, oil imports rose by 1.1 million barrels per day or by 22 percent. In the first eleven months of 1987, oil imports were about 300,000 barrels per day higher than during the same period of 1986. This heavy reliance on foreign oil undermines our national security, weakens our economy, costs American jobs and increases the U. S. trade deficit.

The discovery of new domestic petroleum reserves is especially important because oil production from Prudhoe Bay and the other North Slope fields are expected to decline in the 1990s. North Slope production currently accounts for nearly 25 percent of all U. S. domestically produced oil. The ANWR coastal plain represents the best prospect for maintaining production from Alaska. However, it takes from 10-15 years to bring a field into production.

The 1002 area constitutes less than one-half of 1 percent of Alaska and only about 8 percent of ANWR's 19 million acres. Nearly one-half of ANWR -- almost 9 million acres -- has already been permanently closed to oil and natural gas exploration and development by its inclusion in the 90-million acre National Wilderness Preservation System. The 9-million acre ANWR wilderness includes 450,000 acres of coastal plain.

Other large portions of Alaska have also been put off limits to leasing. More than 56.5 million acres of Alaska have been designated as part of the Wilderness System. Some 92 million acres are either under study for inclusion in the system or have been recommended for such inclusion. If all of the acres under

study or recommended for inclusion becomes part of that system, as much as 148 million Alaskan acres could be designated as wilderness and closed to petroleum operations.

In comparison to the vast wilderness acreages, only a small portion of the 1002 area would be affected by exploration and production activities. Based on experience at nearby Prudhoe Bay, less than one-tenth of 1 percent of the total ANWR area -- or less than 15,000 acres would be affected by drilling and production pads, roads and other facilities, assuming full-field development.

If economically significant oil and gas discoveries were made, activities in the area would last only as long as those discoveries were producible, perhaps 20 to 30 years. Once exploration and production operations ended, the land would be rehabilitated to a natural state.

The petroleum industry's 20-year record in developing the fields on Alaska's North Slope proves that such operations can be and are being conducted in an environmentally sound manner. The technology developed for North Slope arctic operations can be transferred for use on the ANWR coastal plain.

Oil development activities have been conducted on the North Slope without harm to caribou or other arctic wildlife. There is no reason to believe such activity in the 1002 area would pose any threat to the caribou population in that area. The Fish and Wildlife Service, which monitored the two seasons of geophysical operations in ANWR, reported that no significant environmental

impact resulted from those activities.

Environmental justification to lock-up the coastal plain simply does not exist. However, development of ANWR Coastal Plain oil resources could provide important national economic benefits. Employment of the nation's labor and other productive resources would increase both in direct activities connected with finding, producing and transporting ANWR oil and in supplier industries. In addition, ANWR oil production would reduce U. S. import demand. This could hold the world oil price far below the level that it might otherwise rise to, thus benefiting American consumers as well as consumers in other oil importing countries. Under plausible assumptions, additional domestic oil production of one million barrels per day could hold the world price $9 per barrel below the level it otherwise would attain, and hold the annual U. S. oil import bill $38 billion (both figures in 1984 dollars) below the level it otherwise would reach. ANWR has this production potential. A review of the current U. S. energy situation provides much evidence in support of 1002 area leasing.

U. S. Energy Supply Situation

U. S. dependence on oil imports is increasing. If this trend is not arrested, it will result in serious economic and security costs. The following discussion will first explain why this will occur -- indeed why the initial steps in this process have occurred already. The discussion then will address how energy development in ANWR's Coastal Plain could significantly alleviate the problems faced by the U. S. and other oil importing

countries.

Recent Trends in Oil Consumption, Production, and Imports

The price of oil rose sharply in 1973-1974 during the Arabian oil embargo, and again in 1979-1980 in connection with the Iranian supply disruption. The price peaked in 1981, declined through 1985, and then plummeted in 1986. Although the price has risen somewhat this year, it still is far below the levels of the early 1980s. Indeed, after adjustment for inflation, the price now is below the price reached after the first oil price shock of 1973-1974.

The reactions to the price hikes of the 1970s provide important insights into the likely course of events in oil markets over the next few years. These insights are important because many people in the 1970s underestimated the demand and supply responses to higher oil prices, and many today similarly seem to be underestimating the likely responses to lower oil prices.

In the late 1970s, largely in reaction to previous oil price increases, U. S. oil consumption began to fall and production to rise. Consequently, U. S. net imports of oil (imports minus exports) fell from their peak of 8.5 million barrels per day (MMBD) in 1977 to 4.1-4.5 MMBD during the 1982-1985 period. Net imports were reduced from 46.4 percent of total consumption in 1977 to 27.3 percent of consumption in 1985.

Moreover, studies have shown that consumer and producer responses to higher oil prices would have been even greater were

it not for U. S. price controls, which limited the prices of domestically produced crude oil and oil products until 1981, and were it not for the so-called Windfall Profit Tax of 1980 which continued to prevent U. S. oil producers from obtaining the full benefits of the world price.[1]

Outside the U. S., oil consumption fell substantially after 1979, while oil suppliers were augmented by newly developed non-OPEC sources such as the North Sea, Mexico and Egypt. As a result of decreased oil import demand both in the U. S. and in the rest of the free world, demand for OPEC oil dropped by about 14 MMBD, or 45 percent, between 1979 and 1985. After Saudi Arabia increased its output in late 1985, the price of oil collapsed.

In response to the price drop, U. S. oil consumption rose and production fell in 1986. Consequently, net imports rose, reversing an 8-year downward trend in U. S. reliance on oil imports. Net oil imports accounted for 33.1 percent of total oil consumption in 1986, up from 27.3 percent in 1985. In the first eleven months of 1987, net oil imports rose to 34.6 percent of total consumption.

Lower oil prices also have affected oil consumption and production outside the United States. Based on International Energy Agency data, non-U.S. free-world consumption outside of

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[1] See Joseph P. Kalt, The Economics and Politics of Oil Price Regulation in the Post-Embargo Era, Massachusetts Institute of Technology Press, 1981; and American Petroleum Institute, Domestic Petroleum Production and National Security, December 1986.

OPEC was up about one percent in 1986 (the latest data available), compared with about a 3 percent average annual decline during the previous six years. On the supply side, non-U.S. free-world production outside of OPEC was up an average of about one percent per year during 1986 and 1987, but this was much less than the 7 percent average annual rate of increase in the previous six years.

In summary, it is clear that the fall in oil prices has already caused free world oil consumption to rise and non-OPEC oil production to fall significantly, thereby increasing the demand for OPEC oil. In addition, as discussed in the next section, the oil price fall has so discouraged exploration and development in the U. S. that further declines in domestic oil production are likely.

The Effects of the Oil Price Fall on the Domestic Oil Industry

The fall in oil prices since 1981 has had a devastating impact on U. S. petroleum development. The price fall and consequent decline in profitability caused a sharp reduction in petroleum exploration and development. Domestic exploration-production capital expenditures by the leading oil companies decreased by about 25 percent between 1981 and 1985. In 1986, these companies cut their exploration-production spending almost in half. The decline continued in the first half of this year; the leading companies again reduced their spending by almost 50 percent from the year-earlier level.

The number of rotary drilling rigs active in the U. S. fell

from a high of about 4,500 in late 1981 to about 1,900 by year-end 1985. The rig count tumbled to less than 700 during 1986 before recovering to about 1,100 recently. Consequently, the number of wells completed in the U. S. decreased after 1981, falling by about 19 percent by 1985. In 1986, well completions fell by more than 30,000, the largest annual decline on record. And the decline in well completions has continued this year.

All this does not augur well for future U. S. oil production, since the reserves needed to maintain production are not being found and developed. Last year we replaced less than half of the reserves we used up. And because of the several-year lag between decisions to invest in many areas and the beginning of commercial production, U. S. oil production will be slower to recover when world oil prices rise in the future.

Likely Trends in Petroleum Production, Consumption, and Imports

The American Petroleum Institute has reviewed a number of recent energy projections by government and private organizations in order to determine expected trends in U. S. oil consumption, production, and imports over the next ten years or so. Although the projections are based on different assumptions and techniques, they are in general agreement on basic trends: they expect U. S. oil production to decline, consumption to increase, and imports to rise considerably during the next decade.

Projections prepared by the National Petroleum Council (NPC) are representative of the outlooks reviewed. The NPC based its projections on a survey of 28 industry, government, consulting

and financial organizations that prepare energy outlooks. The NPC assumed two oil price paths. Its high-price case assumes that the inflation-adjusted price of oil will rise by 5 percent annually, starting at $18 per barrel in 1986. Its low-price case assumes that the real price of oil will rise by 4 percent annually, starting at $12 per barrel in 1986. In the high-price case, the NPC projects that U. S. crude oil production (excluding natural gas liquids) will fall from 8.9 MMBD in 1985 to 8.0 MMBD in 1990 and 6.4 MMBD in the year 2000. Petroleum products consumption is projected to rise from 15.7 MMBD in 1985 to 16.3 MMBD in 1990 and 17.4 MMBD in 2000. Oil imports are expected to rise from 4.3 MMBD in 1985 to 6.2 MMBD in 1990 and 9.1 MMBD in 2000. In the low-price case, the NPC projects larger declines in production and larger increases in consumption. In this scenario, oil imports are projected to rise to 8.4 MMBD in 1990 and 13.6 MMBD in 2000.

Some projections reviewed indicate that the U. S. could be importing almost one-half of its oil requirement by as early as 1990 if oil prices in 1990 are in the range of some $14 to $20 per barrel. Thus, by 1990 U. S. dependence on foreign oil could reach or exceed the peak level of dependence that existed in 1977 when net imports accounted for 46 percent of total oil consumption. If oil prices follow the trend assumed in the lowest price scenarios reviewed, the level of imports will skyrocket during the 1990s. The National Petroleum Council low-price case, for example, found that 1990 net imports of 8.4

MMBD would account for 48 percent of total U. S. consumption and net imports in the year 2000 of 13.6 MMBD would account for 68 percent of total consumption.

Analysts also expect other industrial nations to become more dependent on oil imports. The rise in imports in the U. S. and the rest of the world is expected to lead to a change in world petroleum market conditions. About three-quarters of the free world's oil reserves are held by OPEC countries. Further, Saudi Arabia and the other Persian Gulf nations alone hold about two-thirds of the free world's current surplus oil production capacity while OPEC as a whole holds over 90 percent. This means that rising world consumption largely will be supplied by OPEC countries, strengthening OPEC's ability to establish and maintain production and pricing discipline among its members.

Economic Costs of Increased U. S. Reliance on Oil Imports

Importing oil rather than producing it domestically imposes two types of costs on the U. S. economy. First, higher U. S. oil imports increase world demand relative to supply and hence tend to raise the world price of oil. Secondly, higher U. S. oil imports relative to world production capacity increase the probability of a sudden spurt in world oil prices and intensify the effects should some physical event shock the world market (generally referred to as "disruption costs").

Effect of Higher U. S. Oil Imports on the World Oil Price

Although there are considerable differences of opinion about the future behavior of the OPEC cartel, from past experience the

most likely scenario is that OPEC will increase oil prices when the world oil market tightens significantly.

Although estimates of OPEC's current and likely future capacity vary somewhat, it appears likely that worldwide demand for OPEC oil will raise OPEC's capacity utilization from its current level of 65 percent or so to over 80 percent within a few years. It will require only a few million barrels per day increase in demand for OPEC oil to bring OPEC's capacity utilization to 80 percent, and most analysts foresee such an increase within a few years.

Based on the historical relationship between OPEC capacity utilization and changes in world oil prices and assuming a base oil price between $15 and $25 per barrel (in 1984 dollars), a one million barrel per day increase in the demand for OPEC oil is estimated to raise the world oil price by $1 to $2 per barrel if OPEC capacity utilization is 80 percent, and by $5 to $9 per barrel if OPEC capacity utilization is 90 percent.

Thus, a substantial increase in U. S. demand for imported oil is likely to increase the nation's oil import bill by much more than the cost of the additional barrels imported. If, for example, the U. S. oil import demand were to increase from 8 to 9 MMBD and this were to cause prices to rise from $25 to $34 per barrel, the daily U. S. oil import bill would rise by more than $100 million ($34/BBL times 9 MMBD less $25/BBL times 8 MMBD) and the annual bill by about $38 billion.

Disruption Costs

Concentration of oil supplies in a politically unstable area like the Middle East increases the risks of a supply disruption. The U. S. can mitigate the impact of an unfavorable Middle Eastern development on the world oil price, however, by reducing its demand for imported oil, thereby creating greater slack in world oil markets.

A disruption has the direct effect of transferring wealth from oil-importing to oil-exporting nations. In the current context, a cutback in foreign oil production that caused the oil price to rise by $10 per barrel would transfer from the U. S. almost $20 billion per year, or almost one-half of one percent of the U. S. gross national product (GNP).

In addition to the wealth transfer effects of an oil supply disruption, researchers have estimated substantial additional costs. Econometric estimates of the overall macroeconomic effects of supply disruptions have been much larger than the direct wealth transfer effects. For example, simulations utilizing the macroeconomic models of Data Resources Inc., Wharton Econometric Forecasting Associates, and Lawrence H. Meyer Associates performed for the National Petroleum Council indicate that the 1973-1974 oil price jump reduced the U. S. GNP by about 2.5 percent within three years, while the 1979 price jump reduced U. S. GNP by about 3.5 percent within three years. And, current estimates indicate that a very large world oil supply shortfall of say 10 MMBD could reduce the U. S. GNP by as much as 7 percent.

As the U. S. becomes more dependent on imported oil, the potential costs of a supply disruption will rise. Therefore, to the extent that low oil prices and/or unwise public energy policies today increase U. S. import dependence, they create the potential for higher disruption costs.

National Security Implications of Increased U. S. Oil Import Dependence

Besides the economic costs of increased reliance on OPEC oil, such reliance can impose military and foreign policy burdens on the U. S. and other oil-importing nations. In brief, because of dependence on oil imports from the Middle East, the U. S. and other oil importers may have to make military commitments and adopt foreign policies that they might not otherwise choose.

In addition, higher world oil prices benefit the Soviet Union, which is the world's largest oil and natural gas producer and holds enormous proved oil and gas reserves. Soviet oil reserves are estimated at 59 billion barrels, representing about 8.5 percent of world reserves and placing it behind only Saudi Arabia and Kuwait. Soviet natural gas reserves are estimated at 1,550 trillion cubic feet, representing 43 percent of the world's reserves.[2]

Benefits From Developing the ANWR Coastal Plain Oil Resources

The oil industry's position with regard to development of the

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[2] For a more detailed discussion of the economic and national security implications of increased U. S. reliance on oil imports, see the American Petroleum Institute's Domestic Petroleum Production and National Security, published in December 1986.

ANWR Coastal Plain (the 1002 area) is straightforward. (1) Based upon USGS estimates of oil potential, the prospects for substantial finds of oil are excellent. (2) Development of the area's oil would provide significant national economic and security benefits. (3) Exploration and development can occur in an environmentally safe manner.

Oil Prospects in the ANWR Coastal Plain

The U. S. Department of the Interior's (DOI) final report, Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment, concludes that if there is economically recoverable oil in the 1002 area, there is a 95 percent chance for more than 0.6 billion barrels and a 5 percent chance for more than 9.2 billion barrels of recoverable oil. The mean estimate is 3.2 billion barrels. It should be emphasized that these are not estimates of the total amount of oil in the area, or the "in-place" oil, but rather are estimates of the economically recoverable oil. The mean in-place estimate is much higher -- 13.8 billion barrels. The DOI also has estimated that the area holds huge quantities of natural gas (the mean in-place estimate is 31.3 trillion cubic feet), but the Department notes that these resources may not be economic over the 30-year time period it considered. This may be so, but if production of such gas does prove economic in that period, each trillion cubic feet (TCF) can provide the oil equivalent of 500,000 barrels per day (B/D) for one year.

Opponents to opening the 1002 area to energy development

allege that, in light of U. S. oil needs, the area would be likely to yield in total at most only a few months supply of oil. By this argument, no field has ever been or ever will be worth developing. Opponents of leasing fail to recognize that U. S. oil reserves are the accumulation of thousands of individual fields, that daily U. S. output is the sum of the contributions of those thousands of fields, and that many individual fields have been contributing to the nation's production over many years. The following facts put ANWR's oil potential in perspective:

o Using the mean estimate of 3.2 billion barrels of recoverable oil, the DOI estimates that the 1002 area would have peak production of 659,000 B/D. Such production would put this single area among the top 20 countries in the world in terms of crude oil production.

o The Interior Department's 3.2 billion barrel mean estimate of the 1002 area's recoverable oil would make the area the third largest oil find in U. S. history -- exceeded only by the Prudhoe Bay field (discovered in 1968 with an estimated 9.6 billion barrels of recoverable oil), which has produced more than 5 billion barrels of oil, and the East Texas field (discovered in 1930 with an estimated 5.6 billion barrels of recoverable oil), which has produced 4.9 billion barrels. If the Department's high estimate of 9.2 billion barrels is realized, this would place ANWR close to Prudhoe Bay in the volume of oil discovered and would increase domestic crude oil reserves by one-third. The

Prudhoe Bay area fields have been producing 15 to 20 percent of all the oil produced in the United States since 1977, but production from these fields is expected to decline in the 1990s.

Thus, the oil potential of the ANWR Coastal Plain is enormous. As the Department of the Interior's ANWR report concluded, "The 1002 area is the nation's best single opportunity to increase significantly domestic oil production over the next 40 years. It is rated by geologists as the most outstanding petroleum exploration target in the onshore United States. Data from nearby wells in the Prudhoe Bay area and in the Canadian Beaufort Sea and Mackenzie Delta, combined with promising seismic data gathered on the 1002 area, indicate extensions of producing trends and other geologic conditions exceptionally favorable for discovery of one or more supergiant fields (larger than 500 million barrels)."

National Economic and Security Benefits from Developing ANWR Oil Resources

If the area's recoverable oil resources turn out to be in the the upper half of the 0.6-9.2 billion barrel range estimated by DOI, and full leasing occurs, peak oil production probably would equal at least one million barrels per day. It should be emphasized, however, that it takes as much as 10 to 15 years to explore for and place into production oil fields in hostile environments such as the 1002 area. Thus, even if ANWR leasing began expeditiously, peak production probably would not be achieved until the first decade of the twenty-first century.

Development of the 1002 area would benefit the U. S. economy significantly. Such sizable production would generate jobs and income, both directly in finding, producing and transporting the oil and indirectly in supplier industries. Based on the DOI's mean resource estimate and a study of the effects of offshore oil production which was prepared for the American Petroleum Institute (API) by Battelle Pacific Northwest Laboratories, the API has estimated that ANWR production could add about a quarter of a million jobs nationwide by 2005. Assuming an average annual worker income of $25,000, total income of about $6 billion per year would be generated.

Additional national economic benefits from ANWR development would occur because ANWR oil production would reduce U. S. oil import demand and consequently reduce the world oil price. As explained above, a one million barrel per day reduction in U. S. import demand at a time when OPEC's capacity utilization rate is above 90 percent (as it is likely to be in the 1990s and beyond), will have a profound moderating effect on the world oil price. Under plausible assumptions, ANWR production of one million barrels per day could hold the world oil price $9 per barrel below where it otherwise would be and reduce the U. S. annual import bill by $38 billion (all in 1984 dollars). Thus, ANWR development would provide a tremendous national economic benefit in the form of lower oil costs for American consumers.

Finally, to the extent that ANWR oil development can add to U. S. supply, it will improve U. S. energy security and increase

the flexibility of U. S. foreign policy. First, a significant level of ANWR oil production will reduce the chances of a foreign supply disruption that would have a sharp impact on the world oil price, since less U. S. demand for oil imports will increase slack in world oil markets. Secondly, should there be a serious event that disrupts world oil supplies, the costs to the U. S. economy will be reduced if U. S. oil import demand is less relative to its total oil supply. Finally, less U. S. dependence on foreign oil allows U. S. foreign policy to be more flexible and strengthens relationships with oil importing allies.

Environmental Considerations

Only a small portion of the 1002 area would actually be disturbed during exploration and production activities. Based on experience at nearby Prudhoe Bay, less than one percent of the surface of the 1002 area could be expected to be affected by drilling and production pads, roads and facilities.

The petroleum industry's record in developing the producing fields on the Alaska North Slope proves that such operations can be and are being conducted in an environmentally sound manner. The technology developed for arctic operations near Prudhoe Bay -- the area of the nation's largest oil and gas fields -- can be used within ANWR in the search for the large deposits of crude oil that may underlie the 1002 area.

Numerous laws and regulations assure that oil and gas activities are designed to protect the surrounding environment. Experience in Alaska and the lower 48 states shows that oil and

gas activities are compatible with other goals such as wildlife protection. Nearly 20 years of experience on the North Slope demonstrates that oil and gas exploration and development can exist in harmony with the arctic environment. Techniques to minimize disturbance include directional drilling, smaller and consolidated facilities, winter construction, use of temporary ice roads, use of special arctic equipment, and elevated pipelines and facilities. The U. S. Fish and Wildlife Service (USFWS) monitored all of the surface activities and geophysical operations conducted on the coastal plain and reported that no significant environmental impact resulted from that activity.

Oil from the 1002 area would be transported by onshore pipeline to the Trans-Alaska Pipeline System (TAPS), which probably will have substantial surplus capacity when ANWR production comes onstream. Experience from TAPS and the Prudhoe Bay, Milne Point and Kuparuk developments proves that pipelines can be designed, constructed and operated on the North Slope to allow passage of caribou and other wildlife.

Development at Prudhoe Bay, Kuparuk and Milne Point in the calving range of the Central Arctic Caribou has not had a harmful effect on this caribou herd. The herd has grown from about 3,000 animals in 1970 to its current size of over 15,000 animals. This experience is reason to believe that development in the 1002 area would not hurt the Porcupine Caribou herd. The 1002 area is only a portion of the calving grounds of the Porcupine herd. Even discovery of a supergiant field would only involve a small

portion of the area. In some years, little or no calving occurs in the 1002 area, but takes place in the foothills to the south and/or in Canada.

Oil and gas operations also would be compatible with other wildlife and environmental aspects of the 1002 area. Moreover, all 1002 area facilities will require air quality permits to construct and operate. Air quality monitoring at the large Prudhoe Bay facilities and the other North Slope oil fields shows that oil and gas operations at these locations fully meet state and federal air quality standards.

Finally, the petroleum industry recognizes that there is some chance that the ANWR Coastal Plain will not contain economically recoverable quantities of oil. If exploration resulted in no commercially producible discoveries, whatever disturbance of the area there is by petroleum activities would cease and rehabilitation measures would begin. If economically significant oil and gas discoveries were made, the occupation of the area would last only as long as those discoveries were producible, perhaps 20 to 30 years -- a very short time in man's historical use of the area. Once operations end, the land will be rehabilitated. Thus, there is little to lose by permitting leasing and development and possibly a great deal to gain.

Conclusion

The American Petroleum Institute believes that S. 1804 should be rejected. The Congress should encourage -- not discourage -- oil companies in their search for domestic oil and natural gas to

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Conclusion

The American Petroleum Institute believes that S. 1804 should be rejected. The Congress should encourage -- not discourage -- oil companies in their search for domestic oil and natural gas to

meet U. S. energy needs and reduce the current heavy over-reliance on oil imports. The ANWR Coastal Plain contains potentially vast petroleum resources which could provide a greater margin of safety against future energy supply disruptions of the type that proved so harmful in the nation in the 1970s.

The petroleum industry's nearly 20 years of environmentally safe and responsible operations on the North Slope provide overwhelming evidence that leasing of the small 1002 area will pose no threat to the arctic wildlife or ecology. There is no environmental reason not to proceed with leasing of the area.

As many as 10 to 15 years are required to explore for and place into production oilfields in arctic frontier areas. For this reason, it is important that action be taken now to open the coastal plain to oil and gas exploration and development. We urge the Congress to reject S. 1804 and any similar proposals which would prevent the nation from moving ahead with this vitally important effort.

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Lana R. Batts
VICE PRESIDENT, POLICY
(703) 838-1787

AMERICAN
TRUCKING
ASSOCIATIONS
2200 Mill Road, Alexandria, VA 22314

December 9, 1987

The Honorable George J. Mitchell
Chairman, Senate Environmental Protection
Subcommittee
United States Senate
176 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Mitchell:

The American Trucking Associations, Inc. (ATA), wishes to state its opposition to S.1804 which would designate the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) a wilderness area.

Secure and reliable energy supplies are critically important to the transportation industry. The ATA believes it is in the nation's economic and security interests to take steps now to assure a continued flow of secure domestic oil supplies for the near term and the more distant future.

A U.S. Department of the Interior report recommended that the Congress enact legislation to permit oil and gas exploration and production activities on the ANWR Coastal Plain. As the report states: "The area is clearly the most outstanding oil and gas frontier remaining in the United States and could contribute substantially to our domestic energy supplies." This assessment was confirmed in a recent study by the Energy Information Administration which estimates that the ANWR Coastal Plain contains up to 7.4 billion barrels of economically recoverable oil.

The petroleum industry has demonstrated that oil and gas operations in Alaska are compatible with the Alaskan environment and wildlife. Oil companies have many years of experience in finding and producing oil in northern Alaska without harm to the sensitive arctic ecology. Such operations are strictly regulated by the federal and Alaskan state governments.

Again, the ATA wishes to acknowledge its opposition to S.1804 which would prevent development of the potentially vast oil and gas reserves on the ANWR Coastal Plain by designating the area as wilderness.

Sincerely,

Lana R. Batts

Lana R. Batts

/cm

COALITION FOR AMERICAN ENERGY SECURITY

M. Isabelle Tapia
Executive Coordinator

December 16, 1987

The Honorable George Mitchell
United States Senate
176 Russell Senate Office Building
Washington, D.C. 20510

Dear Senator Mitchell:

My name is Isabelle Tapia. I am the Executive Coordinator of the Coalition for American Energy Security. The Coalition is a broad-based national coalition that includes 46 members representing various companies, labor and agricultural groups, as well as many national organizations and trade associations who support opening the Arctic Coastal Plain of the Arctic National Wildlife Refuge (ANWR) to oil and gas exploration, development and production.

Opponents of development have expressed concern over the impact on the wildlife and the natural beauty of the area. Oil production at Prudhoe Bay and the construction of the Trans-Alaska pipeline have shown that carefully negotiated development can minimize the impact upon the environment, on fish and wildlife and on the subsistence uses of the Eskimo people. The Coastal Plain of Alaska can be developed safely and without adverse impact on preserving both the environment of the Coastal Plain and the energy independence of the United States.

We urge you to oppose S. 1804, a bill proposing that the Arctic Coastal Plain of ANWR be designated as wilderness.

Your committee has been presented with an opportunity to strategically plan for our Nation's future, an opportunity to "act" rather than "react" to America's needs.

1050 Thomas Jefferson Street, N.W. – Sixth Floor, Washington, D.C. 20007 (202) 333-7484

MEMBERSHIP: Alaska Oil & Gas Association • American Association of Petroleum Landmen • American Institute of Merchant Shipping • American Petroleum Institute • American Trucking Associations • Americans for a Rational Energy Policy • Arctic Slope Regional Corporation • The Associated General Contractors of America • Association of Oil Pipelines • BP North America • Brown & Root, Inc. • Caterpillar Inc. • Chevron U.S.A. Inc. • Crowley Maritime • Dresser Industries, Inc. • Fluor Corp. • Highway Users Federation • Independent Petroleum Association of America • International Association of Drilling Contractors • International Association of Geophysical Contractors • Joint Maritime Congress • Marmet Corporation • NAACP - Anchorage Branch • National Association of Home Builders • National Association of Manufacturers • National Association of Realtors • National Coal Association • National Marine Engineers Beneficial Association • National Marine Manufacturers Association • Natural Gas Supply Association • NL Industries, Inc. • National Ocean Industries Association • National Tour Association, Inc. • Petroleum Equipment Suppliers Association • Recreation Vehicle Industry Association • Rocky Mountain Oil and Gas Association • The Standard Oil Company • The National Grange • U.S. Chamber of Commerce • Western Oil and Gas Association

I have enclosed the testimony of the Coalition which was submitted for the record before the Subcommittee on Environmental Protection.

Sincerely,

M. Isabelle Tapia

M. Isabelle Tapia

Enclosure

COALITION FOR AMERICAN ENERGY SECURITY

M. Isabelle Tapia
Executive Coordinator

TESTIMONY
OF
ISABELLE TAPIA
EXECUTIVE COORDINATOR
FOR THE
COALITION FOR AMERICAN ENERGY SECURITY
BEFORE THE
SENATE ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
ON THE COASTAL PLAIN OF THE
ARCTIC NATIONAL WILDLIFE REFUGE

December 10, 1987

My name is Isabelle Tapia. I am the Executive Coordinator of the Coalition for American Energy Security. The Coalition was formed for the purpose of informing the American public on the critical policy significance of the future status of the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) to America's national security and energy independence.

The Coalition has a broad, representative national base. We currently represent 46 organizations, companies, trade associations, labor unions and other groups who are deeply concerned about America's declining domestic oil production and our nation's growing dependence on insecure sources of foreign crude oil. A list of the Coalition's current membership is appended to my testimony and is submitted for the record in this proceeding.

1050 Thomas Jefferson Street, N.W. – Sixth Floor, Washington, D.C. 20007 (202) 333-7484

MEMBERSHIP: Alaska Oil & Gas Association • American Association of Petroleum Landmen • American Institute of Merchant Shipping • American Petroleum Institute • American Trucking Associations • Americans for a Rational Energy Policy • Arctic Slope Regional Corporation • The Associated General Contractors of America • Association of Oil Pipelines • BP North America • Brown & Root, Inc. • Caterpillar Inc. • Chevron U.S.A. Inc. • Crowley Maritime • Dresser Industries, Inc. • Fluor Corp. • Highway Users Federation • Independent Petroleum Association of America • International Association of Drilling Contractors • International Association of Geophysical Contractors • Jones Maritime Congress • Marriott Corporation • NAACP - Anchorage Branch • National Association of Home Builders • National Association of Manufacturers • National Association of Realtors • National Coal Association • National Marine Engineers Beneficial Association • National Marine Manufacturers Association • Natural Gas Supply Association • NL Industries, Inc. • National Ocean Industries Association • National Tour Association, Inc. • Petroleum Equipment Suppliers Association • Recreation Vehicle Industry Association • Rocky Mountain Oil and Gas Association • The Standard Oil Company • The National Grange • U.S. Chamber of Commerce • Western Oil and Gas Association

The future of the 1.5 million acre area known as the Coastal Plain of the Arctic National Wildlife Refuge (ANWR) is one of the most significant energy policy and national security issues of recent decades.

The Coastal Plain of ANWR contains the nation's most highly prospective area for major "Prudhoe Bay class" discoveries of oil and gas. The public lands of the Coastal Plain are located on Alaska's North Slope near Prudhoe Bay and the Trans-Alaska Pipeline. Very significant oil and gas discoveries have been made both to the east, in onshore and offshore Canada, and to the west of the Coastal Plain, at Prudhoe Bay. All knowledgeable observers, including an independent geologist in a consultant report made public by the National Wildlife Federation, agree that this small (by Alaska standards) 1.5 million acre area represents the nation's best prospect for discovery of one or more new "Middle East class" oil reservoirs.

The issue before the Congress is whether the Coastal Plain of ANWR will be legislatively opened to exploration, development and production or, on the other hand, be designated as "wilderness" as proposed in S. 1804 and, therefore permanently closed. Failure of the Congress to act on pending legislation on this important matter means that the Coastal Plain will continue to be managed as de facto wilderness.

Many national environmental organizations, of course, strongly advocate "wilderness" designation for the Coastal Plain.

The Coalition firmly opposes such a designation. ANWR was enlarged in 1980 from 8 million areas to 19 million acres. Over 8 million acres of ANWR has already been designated as Wilderness.

Given the huge potential of the small 1.5 million acre Coastal Plain study area for major new discoveries of critically needed domestic crude oil, we believe it would be irresponsible to designate this area as wilderness.

Over 20 years of oil industry experience at Prudhoe Bay conclusively demonstrates that crude oil exploration, development and production can take place in a manner that is compatible with the subsistence uses of the Native people of the North Slope and the important fish and wildlife resources of the Arctic and the Coastal Plain.

The nations of the Middle East are major players in international affairs today because of their levels of crude oil production, their huge oil and gas reserves and their ability to control prices. Opening the Coastal Plain of ANWR to development, under reasonable and prudent environmental regulations, will benefit the United States by resulting in greater domestic production.

Oil imports in the United States were up 24% in 1986 over 1985. They are expected to reach 52-68% of total supply by the year 2000, if not sooner. Imports, on an annual basis, are now 35% of total U.S. consumption. Such heavy reliance on oil

imports weakens the U.S. economy, exports American jobs, and seriously undermines our national security.

Today Prudhoe Bay and Alaska's North Slope provide nearly 25 percent of the nation's total domestic crude oil production. These resources will begin to significantly decline at the rate of 10-12% a year beginning in 1988. The 1.5 million acre Coastal Plain has the potential -- if it is opened to responsible, properly regulated leasing, explorations and development -- for enabling Alaska's North Slope to continue to provide a major alternative to imported oil and to make a very substantial contribution to our nation's petroleum needs.

The seriousness of the situation our nation faces has been documented in a variety of recent Federal reports and in major articles in national publications. The Coastal Plain presents the Congress and the nation with an opportunity to take early, well planned, strategic steps to avoid undue reliance on insecure foreign sources for imported oil; an opportunity to "act" rather than "react" to the needs of the American people.

On behalf of our 46 members who support opening the Coastal Plain of ANWR, I urge you to support legislation to open the Coastal Plain to responsible development. We oppose designating the area as wilderness as proposed in S.1804.

The membership of the Coalition for American Energy Security believes that making the Coastal Plain of ANWR available for oil and gas leasing is of vital concern to American consumers and to the most vital interests of the United States.

COALITION FOR AMERICAN ENERGY SECURITY

MEMBERSHIP

M. Isabelle Tapia
Executive Coordinator

ALASKA OIL AND GAS ASSOCIATION

AMERICAN ASSOCIATION OF PETROLEUM LANDMEN

AMERICAN PETROLEUM INSTITUTE

AMERICANS FOR A RATIONAL ENERGY POLICY

AMERICAN INSTITUTE OF MERCHANT SHIPPING

AMERICAN MINING CONGRESS

AMERICAN TRUCKING ASSOCIATIONS

ARCTIC SLOPE REGIONAL CORPORATION

THE ASSOCIATED GENERAL CONTRACTORS OF AMERICA

ASSOCIATION OF OIL PIPELINES

BP NORTH AMERICA

BROWN & ROOT, INC.

CATERPILLAR INC.

CHEVRON U.S.A. INC.

CROWLEY MARITIME

DRESSER INDUSTRIES, INC.

FLUOR CORPORATION

HEHR INTERNATIONAL INC.

HIGHWAY USERS FEDERATION

INDEPENDENT PETROLEUM ASSOCIATION OF AMERICA

INTERNATIONAL ASSOCIATION OF DRILLING CONTRACTORS

1050 Thomas Jefferson Street, N.W. – Sixth Floor, Washington, D.C. 20007 (202) 333-7484

MEMBERSHIP: Alaska Oil & Gas Association • American Association of Petroleum Landmen • American Institute of Merchant Shipping • American Petroleum Institute • American Trucking Associations • Americans for a Rational Energy Policy • Arctic Slope Regional Corporation • The Associated General Contractors of America • Association of Oil Pipelines • BP North America • Brown & Root, Inc. • Caterpillar Inc. • Chevron U.S.A. Inc. • Crowley Maritime • Dresser Industries, Inc. • Fluor Corp. • Highway Users Federation • Independent Petroleum Association of America • International Association of Drilling Contractors • International Association of Geophysical Contractors • Joint Maritime Congress • Marmon Corporation • NAACP - Anchorage Branch • National Association of Home Builders • National Association of Manufacturers • National Association of Realtors • National Coal Association • National Marine Engineers Beneficial Association • National Marine Manufacturers Association • Natural Gas Supply Association • NL Industries, Inc. • National Ocean Industries Association • National Tour Association, Inc. • Petroleum Equipment Suppliers Association • Recreation Vehicle Industry Association • Rocky Mountain Oil and Gas Association • The Standard Oil Company • The National Grange • U.S. Chamber of Commerce • Western Oil and Gas Association

INTERNATIONAL ASSOCIATION OF GEOPHYSICAL CONTRACTORS

JOINT MARITIME CONGRESS

MARRIOTT CORPORATION

NAACP-ANCHORAGE BRANCH

NATIONAL ASSOCIATION OF HOME BUILDERS

NATIONAL ASSOCIATION OF MANUFACTURERS

NATIONAL ASSOCIATION OF REALTORS

NATIONAL CATTLEMEN'S ASSOCIATION

NATIONAL COAL ASSOCIATION

NATIONAL COUNCIL OF FARMER COOPERATIVES

NATIONAL MARINE ENGINEERS BENEFICIAL ASSOCIATION

NATIONAL MARINE MANUFACTURERS ASSOCIATION

NATIONAL OCEAN INDUSTRIES ASSOCIATION

NATIONAL TOUR ASSOCIATION, INC.

NATIONAL WOOL GROWER'S ASSOCIATION

NATURAL GAS SUPPLY ASSOCIATION

NL INDUSTRIES, INC.

PETROLEUM EQUIPMENT SUPPLIERS ASSOCIATION

PUBLIC LANDS COUNCIL

RECREATION VEHICLE INDUSTRY ASSOCIATION

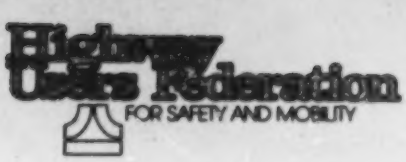
ROCKY MOUNTAIN OIL AND GAS ASSOCIATION

THE STANDARD OIL COMPANY

THE NATIONAL GRANGE

U.S. CHAMBER OF COMMERCE

WESTERN OIL AND GAS ASSOCIATION



Statement of

the

HIGHWAY USERS FEDERATION

for submission to the

Environmental Protection Subcommittee

of the

Committee on Environment and Public Works

United States Senate

on S. 1804

"National Wildlife Refuge Administration Act Amendments"

December 10, 1987

The Highway Users Federation for Safety and Mobility is a long-standing coalition of businesses, industries and associations who support America's highway transportation system. Our membership consists of more than 400 companies and associations representing 27 industrial and commercial categories, who are the primary suppliers of of highway transportation services and products as well as the major users of the nation's highways. The Federation has affiliated highway user groups in every state.

The Highway Users Federation wishes to register its opposition to S. 1804, the National Wildlife Refuge Administration Amendments Act, which would exacerbate a situation already of great concern to Highway Users, and indeed to all Americans -- the adequacy of domestic energy supplies.

We believe that closing the Coastal Plain of the Arctic National Wildlife Reserve (ANWR) to energy exploration and development, the net effect of S. 1804, is untimely and counter-productive in light of the anticipated declines in domestic oil production from other sources and the lead times required for arctic oil exploration.

The Federation has consistently supported environmentally sound exploration and development in the Arctic based on two fundamental facts: (1) the economy of the United States depends on efficient and reliable transportation of people and goods; and (2) such transportation is dependent on petroleum and will remain so for the foreseeable future.

Each year our society becomes more motor vehicle dependent. 1.8 trillion vehicle miles were traveled in 1985. By the year 2000, that total will reach 3 trillion miles.

Demographic and economic shifts continue which have long term effects on national transportation needs. If the population is going to continue to grow, if jobs are going to continue to grow, if our economy and standard of living are to continue to grow, then so must transportation, and with it, a suitable fuel source.

Though the motoring public continues to enjoy adequate and reasonably priced fuel supplies, the economic shock resulting from the oil shortages of the 1970's must not be forgotten; particularly when as much as 1/3 of current supplies are derived from foreign sources, and are therefore vulnerable to interruption or embargoes. Increased domestic

supplies would protect the national economy from the damage which would be inflicted by any sudden reduction in the availability of imported oil.

Reflecting these concerns, we believe that prompt Congressional action to open the Coastal Plains is in the best public interest, and we would urge the committee to reject S. 1804.

The Izaak Walton League of America
INCORPORATED
DEFENDERS OF SOIL, AIR, WOODS, WATERS, AND WILDLIFE

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STATEMENT OF

PAUL TOREN
PRESIDENT, MINNESOTA DIVISION ···
IZAAK WALTON LEAGUE

and

PAUL HANSEN
UPPER MISSISSIPPI REGIONAL OFFICE
IZAAK WALTON LEAGUE OF AMERICA

to

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
IN SUPPORT OF
S. 1804 TO AMEND THE NATIONAL
WILDLIFE REFUGE ADMINISTRATION ACT

DECEMBER 10, 1987

The Izaak Walton League of America and its Minnesota Division appreciate the opportunity to submit testimony to the Committee on Environment and Public Works in support of S. 1804 to amend the National Wildlife Refuge Administration Act.

In 1978, the Izaak Walton League of America at the convention in French Lick, Indiana called specifically for full Wilderness protection for the Arctic National Wildlife Range, now the Arctic National Wildlife Refuge. Our 46,000 members in 412 chapters nationwide continue to support Wilderness designation for this Refuge.

Tucked above the Arctic Circle in northeast Alaska lies the Arctic National Wildlife Refuge. It is a stunning landscape that is home for the breeding populations of some of North America's most rare and unique animals. This refuge is home and breeding ground for the Porcupine Caribou herd, which now numbers 180,000, in addition to musk oxen, grizzly bears, arctic fox and other mammals. The Refuge is also the breeding ground for Tundra Swans, Golden Eagles, Peregrine Falcons and tens of thousands of other migratory birds with names like phalaropes, jaegers, plovers, eiders and turnstones.

Unfortunately, this remarkable refuge is also the latest target of the economically strapped oil industry, even though the chances of a major find like the one at Prudhoe Bay are less than 5 percent.

Opponents of this amendment, including the Reagan Administration, claim that Americans should sacrifice this extraordinary part of our natural heritage for national energy security. This is an example of the "exhaust America first" energy policy that is absurd for a number of reasons. Increasing production will do nothing to reduce our society's addiction to foreign oil and vulnerability to another embargo. Under the most optimistic projections, oil and gas production from the Arctic National Wildlife Range will never provide more than 4 percent of the nation's oil needs. Even if significant oil is found, it will only delay the day of reckoning energy shortages by a few weeks or months, at the cost of our last remaining pristine Arctic wilderness.

Ironically, the Appliance Energy Efficiency Act, which President Reagan vetoed last year, would have saved more energy than the Arctic Wildlife Refuge could ever produce.

The obvious road to energy security would be to finish filling the strategic petroleum reserve, enact real and straightforward policies to conserve energy, and to hold the potential oil and gas in the Refuge for a future time when it might really be needed for security reasons. The real driving force behind the push to develop these potential reserves is profits for the troubled oil industry--not national security.

Oil development in the high Arctic is risky business. Spills and fires were commonplace when nearby Prudhoe Bay was developed. Now, ten years after much of the drilling equipment has been moved, only six percent of the area has been revegetated. Sensitive Arctic ecosystems can withstand very little of the pollutants created by these activities. Yet, opponents of this bill would waive all environmental impact studies normally required prior to leasing.

The plan to take this last refuge for Arctic wildlife from future generations, in exchange for a few more weeks of oil should be stopped. The entire Arctic National Wildlife Refuge deserves the protection of designated Wilderness.

MANUFACTURING CREATES AMERICA'S STRENGTH

Statement
of

The National Association of Manufacturers
on S. 1804, "to amend the National Wildlife Refuge Administration Act"

Submitted to the Environment and Public Works Committee
Subcommittee on Environmental Protection
United States Senate

December 10, 1987

National Association of Manufacturers
1331 Pennsylvania Avenue, NW, Suite 1500 — North Lobby
Washington, DC 20004-1703 (202) 637-3000

Executive Summary

NAM objects to S. 1804, introduced by Sen. William Roth (R-DE), because it would designate the coastal plain of the Arctic National Wildlife Refuge (ANWR) as a wilderness area. NAM supports action to open up the coastal plain of ANWR because our nation needs an adequate and secure supply of energy at competitive prices to sustain economic growth. Unfortunately, recent trends in the oil and gas sector reflect a rising U.S. dependence on imported oil. U.S. petroleum imports were approximately 6 million barrels a day in 1986--the highest level since 1980. If this trend continues, imports could make up nearly 50-60 percent of U.S. needs by 1995.

Such heavy reliance on oil imports could further weaken the U.S. economy, which is why it is imperative that this nation prepare for the future and take action to explore and develop domestic resources including the coastal plain of ANWR. In addition, it is also important to note that exploration and development can co-exist with wildlife and strict environmental considerations. One need only look next door to Prudhoe Bay to see that energy resources can be developed in an environmentally safe and responsible manner.

The decisions we make today on ANWR will help to determine how vulnerable we are to imported oil in the near future. NAM, therefore, urges you to support legislation which would give the United States the opportunity to explore for resources that we urgently need.

Statement
of

The National Association of Manufacturers
on S. 1804, "to amend the National Wildlife Refuge Administration Act"

Submitted to the Environment and Public Works Committee
Subcommittee on Environmental Protection
United States Senate

December 10, 1987

Mr. Chairman and Members of the Subcommittee on Environmental Protection, we are pleased to submit this statement on behalf of the National Association of Manufacturers (NAM) in response to hearings held on S. 1804, legislation which would designate the coastal plain of the Arctic National Wildlife Refuge (ANWR) as a wilderness area.

The strength and general welfare of the United States are dependent upon the continued availability and development of adequate supplies of oil and natural gas. Unfortunately, S. 1804, introduced by Sen. William Roth (R-DE), hampers the ability of industry to access essential mineral resources on large tracts of our federal domain because of the wilderness designation. This legislation would place a short-sighted restriction on the mineral resources that ANWR contains.

NAM OPPOSES CLOSURE OF PUBLIC LANDS

NAM's opposition to Sen. Roth's proposal stems from the fact that we believe no areas of public land should be closed to or restricted from resource development and nonwilderness multiple uses in the absence of compelling national interest which override the need for adequate domestic natural resources. Seismic surveys in the coastal plain

conclude that there is a 95 percent chance that the coastal plain contains nearly 5 billion barrels of oil and 12 trillion feet of natural gas in-place. If so, that would make it conservatively half the size of Prudhoe Bay and easily North America's second largest oil field. This could be a significant contribution to our domestic energy future.

FOREIGN OIL IS DISPLACING U.S. OIL IN THE U.S. MARKET

If we were to abandon the search for domestic resources because of ill conceived legislation, such as S. 1804, we will be forced to import more minerals from foreign sources. National energy forecasters now predict that oil imports may increase from 35 percent of the U.S. market to 50 percent by the 1990's.

But, even with immediate access to high potential areas such as ANWR, this picture will not improve short-term. Exploration and development of Arctic oil and gas usually takes more than ten years from the initial discovery to first production. Consequently, any production from this area is not likely to occur much before the end of this century. At that time, oil production from Prudhoe Bay which currently supplies 20 percent of our energy needs is expected to begin to decrease 10 percent to 12 percent a year beginning in 1988. To compensate for this loss of production, new discoveries of domestic oil must be developed or imports must be increased. There are few alternatives.

But despite its relative inaccessibility, ANWR is actually a valuable potential source of domestic oil, in part due to the in-place infrastructure resulting from Prudhoe Bay development.

TRANS-ALASKA PIPELINE ENHANCES COMPETITIVENESS OF THE ANWR RESOURCES

It should be remembered when considering development of ANWR that the Trans-Alaska Pipeline System (TAPS), which was completed in 1977 and cost approximately 10 billion dollars, is already in place. The close proximity of TAPS to the ANWR region only enhances the resource potential for this area.

The approximate $10 billion cost to place TAPS in operation represents a sunk cost; if capacity is fully used, the marginal cost of utilizing TAPS is independent of this cost and is quite low. Since the cost of producing petroleum resources at any site includes development and transportation, the availability of TAPS capacity to transport potential North Slope production at ANWR and elsewhere represents a significant cost advantage versus a site where a more expensive transportation option is required.

This cost advantage resulting from the availability of relatively inexpensive TAPS capacity means that fewer resources need to be expended to produce the petroleum resources in ANWR than at a comparable site lacking in-place transportation facilities. Consequently, the availability of throughput capacity at TAPS for potential ANWR production is not only valuable in that it will help keep out foreign imports, but it will also be economically competitive.

ENVIRONMENTAL CONCERNS

"Economically competitive" however does not exclude "environmentally compatible" development. Opposition to petroleum operations on the ANWR plain arises from the concern that wildlife species and habitat will be significantly harmed. Although any sizeable

petroleum operation will have some impact upon the environment. previous experience demonstrates that ANWR resources can be used in a safe and responsible manner.

One need only look "next door" to the Prudhoe Bay operations. It has been proven that industry and environment can coexist in a multiple use land management program. In fact, several major problems have been resolved as a result of the Prudhoe Bay operation. Aside from the hostile climate and difficult logistics of operating in an extremely remote location, the most challenging technical problems encountered and solved in the onshore Arctic were related to permafrost.

From the years of operating experience there has been developed an environmental protection technology to minimize, and in some cases eliminate, long term changes in the tundra. For example, low-pressure tired vehicles have been developed which can cross the tundra without crushing the vegetative mat or scouring the soils as tracked vehicles might.

The issue of the caribou is of course a concern. Again, Prudhoe Bay serves as an example. When the Prudhoe Bay oil field was developed in the mid-1970s, regulatory agencies acted cautiously and studies were conducted to determine the effects on the Central Arctic caribou herd. In fact, the results of the studies and the tools implemented to prevent damage to the Central Arctic herd were quite positive. in that the herd has increased at a rate of 12-18 percent per year over the past decade. At more than 13.000. it numbers at least four times what it did in 1975 before most of the Prudhoe Bay development activity

began. The positive results from Prudhoe Bay and other similar experiences from northern Europe and the Soviet Union prove that herds can exist in the presence of industrial development, including oil fields and railroads. Wildlife habitats, environmental values, and the petr m industry can and do coexist.

CONCLUSION

As important as ANWR is, it's only one piece of the major energy puzzle. ANWR is what could rescue this nation from foreign imports and provide for some energy needs well into the 21st century. We must be able to plan for future needs, and ANWR can play a role in meeting these needs. NAM objects to Sen. Roth's bill, S. 1804, because it hampers the ability of industry to access essential mineral resources on large tracts of our federal domaine because of the wilderness designation. This legislation would place a short-sighted restriction on ANWR resources.

NAM supports S. 1217 offered by Sen. Frank Murkowski (R-AK) which would "authorize the Secretary of the Interior to lease, in an expeditious and environmentally sound manner, the public lands within the coastal plain of the North Slope of Alaska for oil and gas exploration, development and production." In addition, NAM supports Rep. Don Young's (R-AK) bill H.R. 1082, which also proposes to authorize oil and gas leasing and exploration in the coastal plain of ANWR.

NAM's long-standing policy has been that public land should not be closed to or restricted from resource development and nonwilderness multiple uses in the absence of compelling national interests that override the need for adequate domestic oil, natural gas and other

valuable resources. Before areas are set aside for exclusive uses, every effort should be made to determine the availability of materials and other resources on the proposed set asides, and access should be assured to explore and develop the area's resources.

United States' energy policy should be oriented towards significantly reducing our nation's dependence on imported energy resources. The development of domestic energy resources, such as those contained in ANWR, are the best hope to reduce America's energy vulnerability, and enhance the ability of U.S. manufacturers to be more competitive in world markets. We must take action against economic influences brought on by unstable energy markets that don't allow for proper planning of manufacturers' energy needs and the producers' opportunity to explore. Thank you for the opportunity to express our views.

II

100TH CONGRESS
1ST SESSION

S. 1804

IN THE SENATE OF THE UNITED STATES

OCTOBER 21 (legislative day, OCTOBER 16), 1987

Mr. ROTH (for himself, Mr. BRADLEY, Mr. CHAFEE, Mr. METZENBAUM, Mr. DURENBERGER, Mr. SIMON, and Mr. HARKIN) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

A BILL

To amend the National Wildlife Refuge Administration Act.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That notwithstanding any provisions of the National Wildlife Refuge Administration Act, a portion of the Arctic National Wildlife Refuge in Alaska comprising approximately 1,556,793 acres, as generally depicted on a map entitled "Arctic Coastal Plain Wilderness-Proposed", dated June, 1986, and available for inspection in the offices of the Secretary of the Interior, is hereby designated as a component of the National Wilderness Preservation System.

O

FUTURE MANAGEMENT OF THE ARCTIC NATIONAL WILDLIFE REFUGE

WEDNESDAY, FEBRUARY 17, 1988

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:00 a.m., in room 406, Dirksen Senate Office Building, Hon. George J. Mitchell (chairman of the subcommittee) presiding.

Present: Senators Mitchell, Pressler, Durenberger, Stafford, Chafee, Burdick, Baucus, and Lautenberg.

OPENING STATEMENT OF HON. GEORGE J. MITCHELL, U.S. SENATOR FROM THE STATE OF MAINE

Senator MITCHELL. Good morning, ladies and gentlemen. The Subcommittee on Environmental Protection convenes today to continue its consideration of the future management of the Arctic National Wildlife Refuge, a 1.5 million acre coastal plain, and S. 1804, which would designate that portion of the refuge as wilderness.

This hearing takes up where we left off last December. We heard at that time from Assistant Interior Secretary Bill Horn, EPA regional administrator Roby Russell, Margaret Marin, from the State of Alaska, and Roger Herrera, from Standard Oil.

Unfortunately, because of a conflict related to the Reagan-Gorbachev summit, the other scheduled witnesses were unable to be heard at that hearing. We welcome them back now. We also welcome Mr. Herrera, who has asked to return, so that he might respond to questions and participate in any discussion.

Finally, I want to welcome Mr. Roy Moses, who spent three days traveling from the village of Old Crow, in the Yukon Territory of Canada, in order to provide us with the perspective of native hunters who rely on the Porcupine River caribou herd.

At the December hearing, we began our review of Interior Secretary Hodel's recommendation to make the entire 1.5 million acre arctic refuge coastal plain available for oil and gas leasing.

One of my purposes again this morning will be to discuss the Interior Department report and recommendations. In particular, I have questions about a number of key aspects of the report.

Have the impact on fisheries and wildlife of oil exploration, development and production been considered fully? Are the report and the recommended development consistent with our international treaty obligations with respect to caribou, polar bears and

migratory birds? Have the effects on air and water quality and the supply of fresh water resources been assessed thoroughly?

Have the effects of oil and gas development in the arctic refuge's coastal plain been examined critically in terms of the cumulative impacts of such development in the arctic region? Has a complete review of the coastal plain's wilderness and recreational potential been conducted and assessed fairly?

How much consideration has been given to alternatives to leasing the coastal plain's oil and gas resources at this time? How serious an attempt was made to evaluate the alternatives that would defer development of the coastal plain pending pursuit of other possibilities: such as development of other potential sources of oil, development of other sources of energy, and improved energy conservation?

I believe, in passing title 10 of the Alaska Lands Act, the Congress sought to have these questions addressed as thoroughly and definitively as possible before it made any decisions with respect to the coastal plains future management.

I hope today that we can continue to evaluate the adequacy of the Interior Department report in addressing the impacts that would result from oil and gas development, and the alternatives to such development.

I'm pleased to welcome our panel of witnesses. They include Mr. Tim Mahoney, chairman of the Alaska Coalition; Mr. Gaylord Nelson, former U.S. Senator and counselor to the Wilderness Society; William Van Ness, who is legal counsel for the Arctic Slope Regional Corporation; Elizabeth Raisbeck, who is Vice President of Government Relations, National Audubon Society; and, Roy Moses, who is from the Band Offices in the Old Crow, Yukon Territory; and, of course, Roger Herrera, who I mentioned before. Will all of those persons please come forward.

Good morning, ladies and gentlemen, and thank you very much for coming. We will proceed in accordance with the committee's rules, and in accordance with the order in which the witnesses are listed. As you all know, your written statements will be placed in the record in full. We ask that you summarize your remarks in your oral statement, limiting them to 5 minutes, so there will be time for questions and exchange among the witnesses.

This panel of lights indicates how much time you have. When the green light is on, keep going. When the orange light comes on, think about wrapping up. And, when the red light comes on, stop.

We apologize to those of you who came to the earlier hearings for the inconvenience that resulted in your having to return. We trust you understand the circumstances.

We will begin with Mr. Tim Mahoney. Mr. Mahoney, welcome. We look forward to hearing from you.

STATEMENT OF TIM MAHONEY, CHAIRMAN, ALASKA COALITION

Mr. MAHONEY. Thank you, Mr. Chairman. I'm Tim Mahoney, and I'm chairman of the Alaska Coalition, which is a coalition of 22 groups, large and small, environmental, civic, recreation groups, in Alaska and across the country, who strongly support S. 1804, the Arctic wilderness bill.

We believe that this is, first and foremost, an issue about land, about wilderness land. It is not an issue of technology; it is not an issue even of wildlife management. It has sometimes been described as the battle between the last great unexplored on-shore oil deposit, and the last great Arctic wilderness. The difference is that when it comes to America's Arctic, we are down to one wilderness, and the oil companies have had access to all the rest of the high Arctic. So, last for them is that everything else has been obtained; last for us is that this is what is left.

When we say last, we mean unique. It is an overused word. It is a word that shouldn't be modified. Unique is unique. One, there is no place like the Arctic refuge in America. Even the Department of the Interior's report, which we are very critical of, admits to that. The Department of the Interior states that the Arctic refuge is the "only conservation system unit that protects in an undisturbed area a complete spectrum of the various Arctic ecosystems in North America." The only place.

And, it is a place, not a collection of animals. The 1002 report goes on to explain that the coastal plain has outstanding wilderness qualities, scenic vistas, varied wildlife, excellent opportunities for solitude, recreational challenges, scientific and historic values.

But, what we really care about here, the coastal plain, is the heart of the refuge. Once again, from the Department of the Interior:

> Most of the major wildlife species occurring in the refuge use the 1002 area for all or part of their life cycles. The 1002 area is the most biologically productive part of the refuge. It is the center of wildlife activity. The caribou migrating to and from the 1002 area, and the postcalving caribou aggregation offer an unparalleled spectacle.

These words got past the political decisionmakers at the Department of the Interior: "only," "complete," "the most biologically productive," "the center," "unparalleled." These are very strong words. We'll say it's unique, and we'll say it's great.

Great is a simple word that gets overused and misused, as well. We like the explanation of great wilderness that came from the book "Arctic Wild," by Lois Crisler, who lived in and explored the area before it was designated a refuge by the Federal Government.

She said that she'd lived in wilderness areas in the Olympics, and Colorado. She'd been throughout the country and seen the wildlands that we have left. But, she'd never seen a great wilderness until she came here.

> Great wilderness has two characteristics: remoteness and the presence of wild animals in something like pristine variety and numbers. Remoteness cannot be imitated in cheap materials, and wilderness without animals is mere scenery.

Those who would seek to develop this area have taken the remarkable wildlife population of the place, and have tried to turn that argument into one that is in their favor. Rather than talking about an undisturbed ecosystem, a web of life, they have tried to talk about game management. But, you cannot manage game any better than you can in a wilderness. And, the subtle pitch is that it's all right to destroy the last wilderness so long as we can keep some of the animals alive.

We've been asked: how many caribou do we need? How many caribou can we afford? And, we say we need one herd, living in a

wilderness, in an undisturbed place, on undisturbed land, with their predators, hunted as they've been. One place. This is the last place. And, we hope that you will protect it. Thank you.

Senator MITCHELL. Thank you, Mr. Mahoney. You've established a commendable standard of brevity that the other witnesses will be hard pressed to meet.

Before proceeding to the next witness, I note the presence of our distinguished former chairman of the full committee, Senator Stafford. Senator, do you have an opening statement you wish to make?

Senator STAFFORD. Mr. Chairman, I do not, but I have a very substantial interest in these proceedings. And, to make sure I knew something about them, I journeyed to Alaska last summer and had a reasonably adequate opportunity to view the ANWR area, so that I have that much first-hand knowledge of what it's like up there.

Senator MITCHELL. Thank you, Senator. We're now pleased to welcome a former member of this body, a very distinguished Senator. Senator Nelson, we're always happy to hear from you. Welcome.

STATEMENT OF GAYLORD NELSON, COUNSELOR, THE WILDERNESS SOCIETY

Mr. NELSON. Thank you, Mr. Chairman. Senator Stafford. My statement has been submitted for the record, which discusses our concerns about oil development on the coastal plain. However, there is one issue I want to discuss in the allotted time I have. It's a crucial issue which thus far has almost been totally ignored in the public debate over the future of the 1002 area. As a matter of fact, the first time I have heard it mentioned was the chairman's comment on the studies that were mandated in 1980, and the potential impact on wildlife of oil and gas leasing and drilling in the coastal plain.

The mandates of that statute have not been complied with, is the point that I wish to make here. In the Alaska National Interest Lands Conservation Act of 1980, Congress described the purposes of the Arctic National Wildlife Refuge, and specified that the refuge "shall be managed to conserve fish and wildlife populations and habitats in their natural diversity."

The act further provided that comprehensive studies shall be carried out, with recommendations for protection of the wildlife resources. These studies required an analysis of the impacts of oil and gas exploration and development on the wildlife and their habitats.

Section 304g of the act directed that a comprehensive conservation plan be developed for each refuge. It required, among other things, that each plan shall specifiy the uses within such areas which may be compatible with the major purposes of the refuge.

The purpose of these studies was to provide sufficient scientific information for Congress to make an informed judgment about whether all, or part, or none, of the coastal plain should be opened for gas and oil leasing. Those were the options.

Since the statutory mandate for the studies and the purpose of the studies is specific and unambiguous, the appropriate threshold

questions for this committee and Congress to ask are these: Are the impact studies adequate to predict the effect of oil production on the caribou, snow geese, shore birds, nesting birds, sheep, polar bears, grizzly bears, and their habitats?

The second question to be asked is: Are the wildlife and habitat studies adequate to assure that oil and gas development can proceed without significantly compromising the purposes of the refuge as spelled out in the statute and the regulations?

In short, based on these studies, can Congress make an informed decision respecting the long-term management of the coastal plain?

The answer to each of these questions is an unequivocal no. There is an overwhelming consensus among professionals who have reviewed the studies that far more information is required to comply with the statutory mandate. Indeed, I have been unable thus far to find in the testimony, or the literature, a single biologist, or any other scientist, who believes the studies are adequate to predict the impact of gas and oil development on fish and wildlife and their habitats. On the other hand, the Interior Department's final legislative impact statement has come under heavy criticisms from a number of distinguished scientists, as well as the Environmental Protection Agency, the Congressional Research Services, and the Canadian government's detailed critique.

Now, since the committee has access to all this information, and some of it has been in the testimony before this and other committees on the Hill, I will only briefly recite a few excerpts from these sources. It's important to note that they all go the very central core of the issue; that is, the inadequacy of the studies that Congress mandated be presented to the Congress before any action was taken.

The Congressional Research Service, for example, on May 22, 1987, states:

> While the compilation of background biological data surpasses all previous efforts in this field, the environmental analysis does not relate impacts to the statutory mandates of ANWR.

The U.S. Environmental Protection Agency, June 2, 1987, stated:

> Based on the inadequacy of the information presented in the final LEIS, EPA would normally recommend that a revised document be prepared.

In his testimony on October 22, 1987, Doctor David Klein—a biologist, member of the faculty at the University of Alaska, Fairbanks, and Director of the Alaska Cooperative Research Unit—listed a whole series of questions that it is necessary to answer.

Then, he states:

> Answers to these questions are needed before we proceed to develop and use the energy resources that may be present in ANWR. These questions must be addressed through well-designed investigations that often will require more than just a few months of field effort during the brief arctic summer.

Science Magazine contained an article making the same kind of argument, signed by a half dozen distinguished scientists from three or four universities.

Mr. Ken Whitten, game biologist from the Department of Fish and Game, responded to the claims of the oil companies and other proponents of opening up the area by stating:

Unfortunately, our experience in the Prudhoe Bay area over the past decade suggests that maintaining the functional integrity of the caribou summer range might not be possible given the widespread surface use requirements for oil and gas development.

Well, Mr. Chairman, those are some of the excerpts. Now, my view is that if Congress is to comply with the law passed in 1980, further studies are required. There isn't any question or argument from any scientists about that, at all. So, if we're going to pass a law without completing the studies, we're not complying with what we, the Congress, mandated in 1980.

It seems to me the most logical step for Congress to take at this time, is to refer all of these studies, the draft and final report by Interior, the congressional testimony, and the various critiques, to the National Academy of Sciences for evaluation and whatever recommendations the Academy may have for further studies. When the Academy completes its review and recommendations, Congress, the Interior Department and the public will be able to make an informed judgment on what further action is indicated.

Without such an independent review by a highly regarded scientific organization, the controversy over the management of the coastal plain cannot be rationally resolved.

Thank you, Mr. Chairman.

Senator MITCHELL. Thank you, Senator Nelson. We'll proceed with the next witness, and are pleased to note the presence of several additional members of the committee, including the distinguished chairman of the full committee, Senator Burdick. Senator, do you wish to make an opening statement?

Senator BURDICK. No statement.

Senator MITCHELL. Senator Durenberger, do you wish to make an opening statement?

Senator DURENBERGER. No, I don't. Thank you very much.

Senator MITCHELL. Senator Baucus.

Senator BAUCUS. No, thank you, Mr. Chairman.

Senator MITCHELL. Next, we'll hear from Mr. Van Ness. Mr. Van Ness, welcome. We look forward to hearing from you.

STATEMENT OF WILLIAM J. VAN NESS, JR., ESQ., VAN NESS, FELDMAN, SUTCLIFFE & CURTIS, LEGAL COUNSEL FOR ARCTIC SLOPE REGIONAL CORPORATION, BARROW, AK

Mr. VAN NESS. Thank you, Mr. Chairman. I appreciate the opportunity to appear here today. I am legal counsel to the Arctic Slope Regional Corporation, and appear today on their behalf. Unfortunately, their annual shareholders meeting is scheduled for Friday of this week, and runs through the weekend. As a result, none of the officers were available to be here today to testify.

I have previously submitted for the record the testimony of Mr. Jacob Adams, the President of the Arctic Slope Regional Corporation. I ask that it appear in full in the record.

Senator MITCHELL. That will be done. (See p. 207.)

Mr. VAN NESS. I would like to now summarize a few brief points Mr. Adams would have made, if it had been possible for him to be present today.

Arctic Slope Regional Corporation is, of course, one of the twelve regional corporations created pursuant to an Act of Congress in

1971, when the Alaska Native Land Claims Settlement Act (ANCSA) was adopted. That Act extinguished a land claim, a claim to "aboriginal title" by the Eskimo people of the North Slope, to all of the 56 million acres of Alaska's North Slope.

The Eskimo's land claim prevented, at the time, the development of Prudhoe Bay, and the construction of the Trans-Alaska pipeline; it raised a major cloud on all of the land titles and leases on the North Slope of Alaska.

In 1971, when Congress adopted ANCSA, the Act extinguished the Eskimo people's and other native groups' land claims to Alaska. In return, the native people were given a limited land entitlement, 40 million acres out of the whole State for the twelve regional corporations and the 200-plus villages, and access to some cash resources that were provided as part of the settlement.

With this background, you have to recognize that the Eskimo people only a few years ago claimed and had aboriginal title to all the resources of the North Slope: the oil and gas resources at Prudhoe Bay as well as the fish and wildlife resources in all the 56 million acres of those North Slope lands.

ASRC and its 3,700 shareholders support the opening of the coastal plain to oil and gas leasing, subject to a carefully regulated, environmentally-sensitive set of regulations, permit stipulations, conditions and terms.

They do so for a number of reasons. First of all, the Eskimo people now own 92,000 acres of land, surface and subsurface estate, as fee title—their private property—around the village of Kaktovik. Three of those townships of land are outside the coastal plain area; that is north of the coastal plain, around the village of Kaktovik, but still within the Arctic National Wildlife Refuge. One township of their lands is located within the coastal plain. It is south of the village of Kaktovik.

These lands represent the Eskimo people's best and most valuable economic asset. They would like from the Congress the right to develop that asset—to have the economic benefits they were denied in the sense that they did not receive any direct economic benefit at all from the development of Prudhoe Bay, or the other oil fields that are currently operating on the lands they once owned. They have unmet human needs. They would like to meet them through the free enterprise system and not as a part of State or Federal welfare programs.

Second, the Eskimo people are citizens of the North Slope borough, which is county government for the North Slope of Alaska. The North Slope borough's primary tax base is, in fact, the oil development that is occurring at and near Prudhoe Bay.

Prudhoe Bay is half produced. It will go into decline probably within the next year. The two million barrels per day of domestic oil production it currently provides the nation will decline very, very sharply. As it does so, this country will be denied a major source of domestic oil.

At the same time, the Eskimo people and other residents of the North Slope borough will lose a tax base that has enabled them, for the first time, to have fire protection, decent housing, access to medical care, telephones, electricity. So, development of the coastal plain is a very important issue from their point of view.

Finally, Mr. Chairman, I would like to conclude by saying that the Eskimo people of the North Slope that live near and around Prudhoe Bay are really, in my opinion, the best judges and the best witnesses as to what the impact of oil development is on North Slope resources.

They have monitored and studied very carefully all the activities leading up to Prudhoe Bay and its development. They were very concerned, initially, as to what the impact of development and technology would be on their life style and resources. They watched it, they saw it happen, and they concluded that development can take place if it's properly regulated, if the right amount of money is spent, and if good technology is used in a manner that is compatible with their subsistence uses, the fish and wildlife resources of the area, and the environment of the North Slope.

With that, Mr. Chairman, I will conclude by saying that they feel strongly about this issue. They are the best witnesses on it, and they would recommend that—if properly regulated—the coastal plain be opened to a program of oil and gas leasing and development.

Thank you.

Senator MITCHELL. Thank you, Mr. Van Ness. Ms. Raisbeck, welcome, again. As always, we look forward to hearing from you.

STATEMENT OF ELIZABETH RAISBECK, VICE PRESIDENT, GOVERNMENT RELATIONS, NATIONAL AUDUBON SOCIETY

Ms. RAISBECK. Thank you for this opportunity to testify, Mr. Chairman. I represent the National Audubon Society, a national conservation organization of 550,000 members and over 500 chapters in the United States.

About a year ago, the board of the National Audubon Society established its policy on the Arctic refuge, after considerable discussion. While we have not endorsed any of the wilderness legislation before the Congress, it is the policy of the National Audubon Society that the Arctic refuge should continue to be managed and protected as wilderness, unless, and only unless, impartial scientific evidence demonstrates that we need the energy in the refuge to meet our energy needs and extraction activities can be done without damage to the outstanding wildlife and wilderness values which the refuge was created to protect.

Over the last year, there's been extensive public debate on opening up ANWR. In our view, there's been no evidence presented to date to justify opening up the refuge. In fact, the evidence has virtually all gone the other way. Numerous witnesses before other committees have shown that other energy sources could provide far more oil, or oil equivalent, than the refuge could provide, and that it would be virtually impossible to develop the refuge without destroying its unique wilderness character.

We have been impressed with the recent report produced by the Natural Resources Defense Council, and the National Wildlife Federation, and Trustees for Alaska, describing pollution problems at Prudhoe Bay. This is a very important piece of work which I hope all the members of the committee will study.

I'm sorry to see there is no representative here today from any of those groups, but a few of the highlights from their report include such facts as 60 million cubic yards of gravel have been used to construct facilities, including over 300 miles of roads and 5,500 acres of gravel paths at Prudhoe Bay.

Open gravel mines cover approximately 720 acres and an additional 3,400 acres of habitat have been flooded due to the impounding of roads and paths in one of the region's oil fields alone.

In 1986, 64 million gallons of reserve pit waste water, often containing toxic substances, were discharged directly onto the tundra from those pits on the North Slope. An additional 37 million gallons of reserve pit fluids were applied to roads on the North Slope. When all these impacts of these adjacent oil fields are added up together, that's quite a pollution record, indeed, and its impact is cumulative over the years. It is our belief that similar problems will occur in the refuge if energy development proceeds there. It may cause a level of damage that will be virtually impossible to mitigate.

Another problem that the whole debate over the Arctic refuge has caused that I think is of particular interest to this committee is that 90 to 95 percent of the refuge manpower and financial resources over the last six years have been devoted to only eight percent of the refuge. Since initiation of the 1002 assessment six years ago, virtually all the manpower of the refuge has gone to doing studies in the coastal plain, and the rest of the refuge has been totally neglected. This has caused numerous problems in the refuge, which were outlined in a report, which the committee doesn't have, but which we would be glad to provide.

Just to name a few of the problems which have been highlighted, there is a need to monitor and clean up old dewline sites and small fuel spills from seismic operations. Private fuel hauls across the refuge pose a potential threat.

Surveys of migratory birds staging in lagoons and birds nesting on coastal plain, brown bear studies, golden eagle studies—all have been attempted, but with poor success. Hunting of Dall sheep is steadily increasing, yet there is no complete inventory of the population on the refuge. No information exists on the population of brown bears outside the 1002 area.

No data exists on the extent of public use of the refuge. Wolves and wolverines are being run down and killed with snowmobiles, but there is no data on this problem. There are problems with the development of inholdings, and law enforcement of the 18 million acre refuge is the primary responsibility of one agent, whose patrols are "irregular."

Finally, I would like to just touch on the energy issue, because we believe it really is the central issue, and the opening up of ANWR should be discussed in the context of a full debate of what our energy policy should be. One of the important things to come out of the ANWR debate in the last year is the beginnings of a real national debate over our energy policy. And we argue that this is precisely the direction the debate should take.

In 1984, the National Audubon Society published an alternative energy plan for this country, one which showed we could have a full economy while husbanding our precious nonrenewable energy

resources. One of the great tragedies of the last 8 years is that the present administration, while talking about concern for national energy security, has pushed policies which are making us evermore dependent on foreign oil. They have slashed the conservation programs, opposed national appliance standards, and succeeded in reducing fuel economy standards for cars.

It's our view that there are alternative energy policies which are described fully in our testimony, which should include a mix of filling the strategic petroleum reserve, putting some of our national resources into development, encouragement of more energy conservation, and encouragement of flexible fuels, particularly use of methanol, which is coming on line, and could be speeded up. These are far faster and cheaper alternatives to the Arctic refuge oil potential.

Just a 1.7-mile-per-gallon improvement in our fuel efficiency standard for automobiles would provide us all the energy we might find in the Arctic refuge.

With that, I'll close my testimony.

Senator MITCHELL. Thank you, very much, Ms. Raisbeck. Our next witness is Mr. Roy Moses. For the benefit of the Senators not here when I began this panel, Mr. Moses lives in the village of Old Crow, in the Yukon Territory of Canada, and it took him 3 days to get here and provide us with his perspective of native hunters who rely on the Porcupine River caribou herd. So, Mr. Moses, we're very grateful to you. I don't know of any witness who's had such a long journey to come before this committee. That alone would compel us to listen carefully to your views. In addition, we do know you represent native hunters, and we look forward to hearing from you.

Senator STAFFORD. Mr. Chairman, could I also point out that he has three colleagues here who are also from Canada, and maybe in one instance traveled farther than he did to get here. Finally, I note that being from Old Crow, Mr. Moses, you have given a new meaning to that term in the United States, where it refers to a certain kind of refreshment.

Senator MITCHELL. Thank you. Proceed, Mr. Moses, and speak directly into the microphone.

STATEMENT OF ROY MOSES, BAND OFFICE, OLD CROW, YUKON TERRITORY, CANADA

Mr. MOSES. Thank you, sir. Mr. Chairman and members of the subcommittee, my name is Roy Moses and I represent the aboriginal people of Canada who have been utilizing the Porcupine herd for the last 20,000 years.

My home in the Yukon Territory of Canada is a long way from Washington. In fact, it has taken me 3 days of plane travel to come here and speak to you for five minutes today.

The expense and planning that enables me to attend this hearing indicates how concerned Canadian native people are about the future of the Porcupine caribou herd, and the threat imposed by oil exploration and development on its range in Alaska.

We sincerely appreciate being invited by this subcommittee to present a Canadian perspective on the 1002 issue. After all, this is

an international matter affecting wildlife, conservation, and native people in both the U.S. and Canada.

We also commend Senators Roth, Bradley, and Chafee for drafting a conservation bill that recognizes the enduring value of true wilderness—a bill that will guarantee a wildlife heritage for both of our nations long after the energy debates of this era are past.

Although the total human population of our region is over 7,000, most of the Canadian communities involved with the Porcupine caribou herd are very small. There are few full time jobs, little or no recreational facilities and not much for entertainment. Most places have only one store and some are lucky enough to have a cafe. But the lack of modern diversions is compensated for by the land and most of all the caribou.

People in these little villages hunt caribou, eat caribou, sew caribou and talk caribou. When you people go out to play golf or tennis, we go out to hunt caribou. When you take your children out to the cottage or the beach, we take ours out to camps where we hunt and preserve caribou. When you are cooking sirloin steaks on the backyard barbecue, we are roasting caribou over a campfire. For us, caribou provide food, recreation, a cultural heritage and beyond all that an identification with out surroundings that is fulfilling beyond description.

Although in the short time available, I have only sketched the significance of the Porcupine caribou herd to the native people of Canada, I hope it will enable you to appreciate what it would mean for us if the caribou failed to return to our country. If the caribou disappeared from our land, it would virtually destroy our people. Our communities would likely remain because native people do not abandon their land, they just suffer along with it. The popular term nowadays is "cultural genocide," which means that we would be alive in body but dead in spirit.

In truth, I imagine that some people would literally perish from the overwhelming depression that would settle on our communities. It would be the native equivalent of the "dirty Thirties" in America, where families were torn apart, people drifted aimlessly about looking for work, and hopes for security and self-esteem were destroyed. Americans recovered from the "dirty Thirties," but the specter of that terrible time still haunts them. However, if the caribou disappear from our land, our "Great Depression" will be permanent. There is no way to recover from the extinction of a way of life.

The native people of Canada therefore support Senate Bill 1804 as being the best guarantee for a promising future that we could hope for. Nothing would please us more than to see such a bill passed by the American Congress. It would mean that for once we could relax and get on with life instead of rushing from one environmental firefight to another in the endless struggle to save our land.

In Canada, the Porcupine range is well protected by a variety of conservation measures. And, in Alaska, the same can be said for the Porcupine range other than the 1002 area. Protecting the 1002 lands in the Alaska National Wildlife Refuge would be the finishing touch on a conservation masterpiece that we could all view with pride and pleasure for generations to come.

Thank you for this opportunity to speak before this subcommittee. I would be pleased to answer any questions you might have.

[An attachment to Mr. Moses' statement follows:]

Appendix

CANADIAN USERS

of the

PORCUPINE CARIBOU HERD

Information on the utilization of the
Porcupine Caribou Herd in Canada

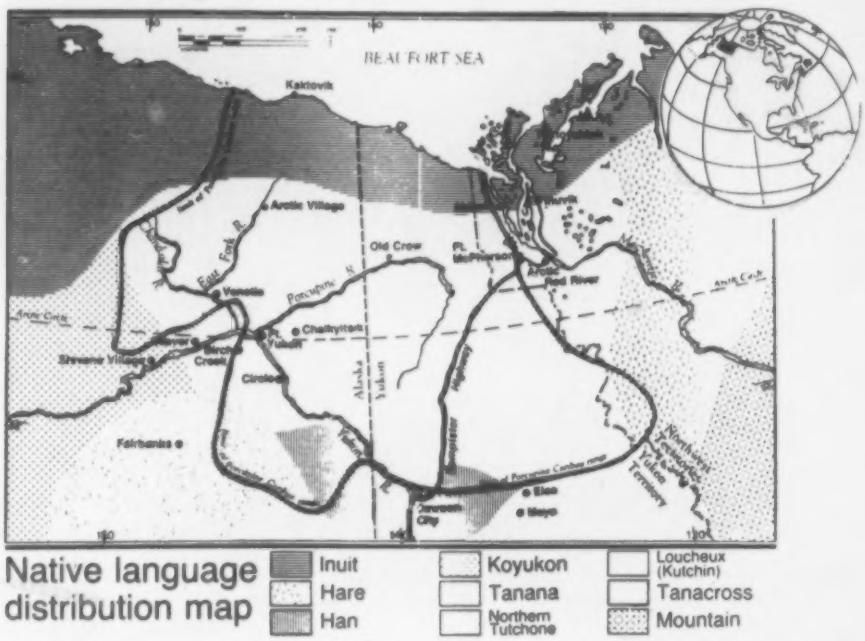
February 1988

From testimony of Roy Moses before the Senate
Subcommittee on Environmental Protection, February 17, 1988.

Who are the Canadian Users of the Porcupine Caribou Herd (PCH)

The principal users are the Inuit (Eskimo) and Gwich'in (Athapaskan Indian) of the north Yukon Territory, and the lower MacKenzie River in the Northwest Territories (map). These people reside in the following communities: Tuktoyaktuk (Inuit and non-native); Inuvik and Aklavik (Inuit, Gwich'in and non-native); Dawson City, Mayo and Elsa (Gwich'in and non-native); Old Crow, Pelly Crossing, Ft. McPherson and Arctic Red River (predominantly Gwich'in). In 1984-85 the total population of these 10 communities was about 7,000 people. In addition, a significant number of hunters come from the Yukon capital of Whitehorse which has a population of about 18,000.

Human occupation of the north Yukon and adjacent N.W.T. has been archeologically dated to at least 20,000 years ago and aboriginal use of caribou has likely been continuous since that time. Porcupine caribou are also hunted by non-native residents in both territories and a few caribou are also taken by non-resident sport hunters.

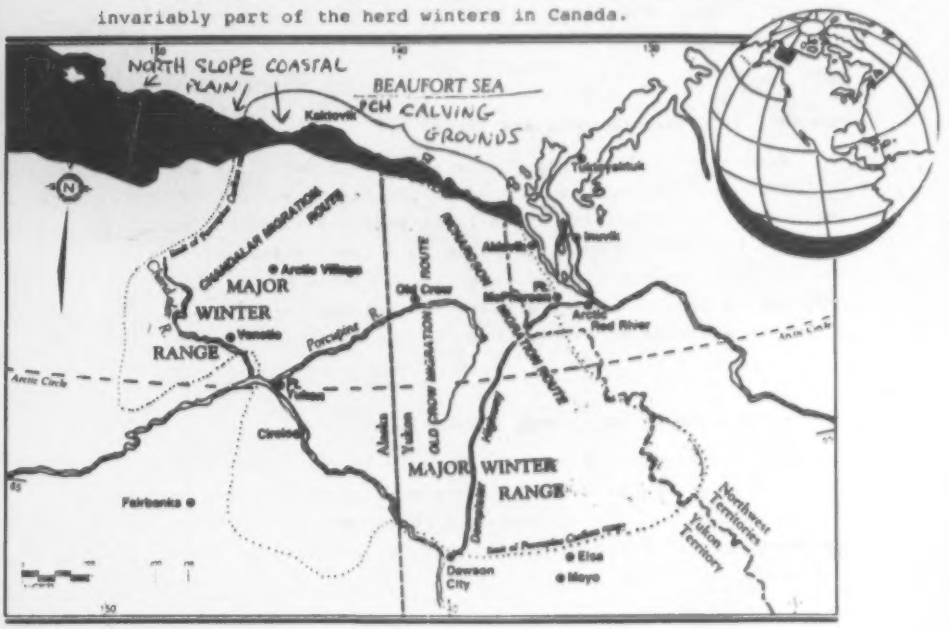


- **What proportion of the PCH harvest is made by Canadians?**

Canadians have harvested more Porcupine Caribou than Alaskans in 9 out of the past 10 years during which the Canadian harvest has several times exceeded 80% of the total. In 1985/86 - the most recent year with complete records - the total PCH harvest was 3148-3348 of which Canadians accounted for 2527 or 75 - 80%. Over the past 10 years, estimates of the total annual PCH harvest have ranged between several thousand animals and more than 7,000. Fluctuations in annual harvests are due to variaitons in migration routes and winter ranges from year to year which govern hunter access to the herd.

- **What portion of the PCH range is in Canada?**

About 50% of the herd's total range is in Canada (map 2). The major calving grounds however, are mainly in Alaska. Part of the Porcupine Herd usually summers in the north Yukon and invariably part of the herd winters in Canada.



When do Canadians hunt Porcupine Caribou?

Some caribou are hunted by Canadian native people every month of the year but the majority of the harvest occurs in the fall and spring. The same pattern likely applies to Alaska as well.

How do Canadians utilize Porcupine Caribou?

All but a few caribou are harvested for subsistence purposes. All edible parts are utilized by Canadian native people. Some hides are used for decorative clothing, tourist products and sleeping robes. Antlers are carved both for personal use and for sale. In all native communities, caribou is the staple food supplemented by other wild game and fish. Domestic meat (beef, chicken) is rarely used as it is very expensive because it must be shipped from the south. As well it is often of poor quality and generally considered inferior to wild meat. Porcupine caribou are also beginning to play an increasingly important role in tourism associated with the Dempster Highway and the North Yukon National Park.

How many Porcupine Caribou are there?

Figures vary depending on the source and method of analyses. In Canada we refer only to the adult population as most of the calves do not survive their first year and also they are rarely harvested. Results from the July 1987 census estimate the PCH population at 135,000 adults. Comparison with the 1983 census results indicate that the herd has been increasing at an average rate of 5% per year for the last four years.

Is the PCH endangered by over harvesting?

No, harvest levels over the past 10-15 years have evidently been sustained by the herd since its population has been increasing during that period. In Canada, the Porcupine Caribou Management Agreement provides for harvest quotas, if required to protect the herd.

Do Canadian Users participate in PCH management?

Yes, in 1985, representatives of three native organizations plus their respective territorial governments and the federal government signed the in-Canada Porcupine Caribou Management Agreement with the following objectives:

1. To co-operatively manage, as a herd, the Porcupine Caribou and its habitat within Canada so as to ensure the conservation of the Herd with a view to providing for the ongoing subsistence needs of native users;
2. To provide for the participation of native users in Porcupine Caribou Herd management;
3. To recognize and protect certain priority harvesting rights in the Porcupine Caribou Herd for native users, while acknowledging that other users may also share the harvest;
4. To acknowledge the rights of native users as set out in this Agreement; and
5. To improve communications between Governments, native users and others with regard to the management of the Porcupine Caribou Herd within Canada.

The agreement provides for the formation of an 8 member mangement Board with 50% aboriginal representation. At present 6 out of 9* members are of aboriginal descent including the chairman and vice-chairman. The Canadian Porcupine Caribou Management Board has been operating for 1 1/2 years during which time it has been active in a variety of conservation and management issues, such as the International Conservation Agreement between Canada and the United States signed in July 1987 and the ongoing "1002" proposals in Alaska. The Board also reviews all PCH research, management and conservation programmes in Canada and provides comments and recommendations to the appropriate agencies.

* including the chairman

Senator MITCHELL. Thank you very much, Mr. Moses. I'm pleased to note the presence of Senator Chafee, the former chairman of this subcommittee. We'll now proceed to questions. In accordance with the committee rules, the questions will occur in the order in which the Senators appeared at the hearing, and will be limited to 5 minutes for each round until all questions have been exhausted. All present Senators, and those who are not present, but who wish to do so, may submit written questions to the witnesses. We ask that you respond to the written questions in writing at your earliest opportunity.

The subcommittee has been provided with a copy of the comments by Canada on the Interior Department report and recommendations. Without objection, I will ask that it be placed in the hearing record. (See p. 248.)

Mr. Moses, can you tell us if the Canadian government generally supports the position of the local communities of the Yukon and the Northwest Territories as you've expressed it here today?

Mr. MOSES. Yes.

Senator MITCHELL. Thank you. I want to return to a subject about which I questioned Mr. Horn and Mr. Russell at the hearing in December. And that concerns the EPA's review comments on the Interior Department's final legislative environmental impact statement. We've not yet received Mr. Horn's written response to the EPA's comments.

I'd like to get each of your reactions to some of the shortcomings in the report as identified by EPA. First, with respect to the subject of cumulative effects. On page three of the enclosure, the EPA's letter to Interior on June 1, 1987, the EPA stated that, and I'll read two comments:

> Cumulative effects are not adequately evaluated in the final legislative environmental impact statement. The final statement provides a list of criteria for determining which action should be included in a cumulative effects analysis. The criteria appear to be unduly restrictive and narrow the focus of the analysis.

The comment states further:

> Use of the criteria has resulted in only existing projects being considered. The potential for future large-scale development of offshore Beaufort Sea leases, oil and gas development in the Canadian Arctic, and construction of large diameter gas pipelines are only marginally considered.

I'd like to ask each member of the panel who wishes to do so, to respond to the questions of whether or not you agree with the EPA's comments I've just read. If so, why, and if not, why not? Perhaps I could begin with you, Mr. Mahoney.

Mr. MAHONEY. We do agree with EPA that cumulative effects, as well as many other problems, exist in this document. The impression that we believe Mr. Horn and Secretary Hodel have sometimes left the committees investigating these issues is that EPA somehow came along late in the process and didn't understand what was going on very well. That is very false. EPA had extensive comments on the draft environmental impact statement, asking the same questions, expressing the same concerns.

We have obtained, and I can submit them to the committee, comments and concerns from Fish and Wildlife survey officials, which also raise general environmental concerns and cumulative environmental impact concerns. Somehow, even though they were raised a

year—or perhaps longer—before the final environmental impact statement came out, they were not addressed. We believe that was because the final impact statement had a political decision made that was not going to be deterred by the scientific findings.

Let me give you a couple of examples. We have talked a lot about caribou and they are certainly the linchpin and the spectacular symbol of this ecosystem. But, polar bears den on-shore here. Most polar bears den offshore on the ice. Here, polar bears den on-shore. The polar bear population of northern Alaska is very fragile. It's not growing; it's subject to disruption, by offshore activities as well as other on-shore activities.

There is no cumulative impact analysis. The analysis in the environmental impact statement says: "Should activities elsewhere not harm the polar bear population, then the polar bear population will probably not be harmed."

But, we have activities ongoing elsewhere, on the North Slope of Alaska, and offshore. And, we're proposing more activities here. It makes no sense, but there is no analysis.

The other point would be the cumulative impacts over time. While the oil industry has sometimes claimed that the oil developments at Prudhoe Bay grows smaller, and more compact, and more environmentally benign, the overall patchwork of development continues to grow on the North Slope. Prudhoe Bay spreads. If the oil companies hit a major find offshore, it will continue to spread offshore, with the accompanying environmental problems.

There is pressure to open the Haul road from Fairbanks to Prudhoe Bay. Now, we have tour buses going up it. We will soon have illegal hunting and poaching on the road, and someday it probably will be open to public travel. What is the impact of the industrialization of Alaska's north country? To say it doesn't exist would be like saying a century ago we didn't have to worry about putting Yellowstone Park aside because no one would ever live in the West. It just isn't so.

Senator MITCHELL. Thank you very much, Mr. Mahoney. Unfortunately, you've used up all of my time. I do want to give the others a chance to be heard, particularly those who hold a contrary view. I'm going to defer to my colleagues, now. When we come back for a second round of questioning, I'm going to ask those who have not responded to the question to do so in order to get a full range of opinion on this. Please note the presence of Senator Pressler, who's just come in. Do you have an opening statement you wish to place in the record, Senator?

Senator PRESSLER. I have to go to the Foreign Relations Committee to form a quorum, but I'll be back. I'm going to leave behind some questions. I want to greet my former colleague, Senator Gaylord Nelson, and tell him that Joe Floyd said to say hello, and if you have any good stories to call him. Whatever that means, I don't know. In any event, I have questions here for the witnesses, and I thank the chairman. When my turn comes, I'll try to ask them. If I can't, maybe they could be asked for the record.

Senator MITCHELL. Thank you, Senator Pressler. Senator Stafford.

Senator STAFFORD. Thank you, Mr. Chairman. I have just a few questions. First, let me say it's good to see my colleague in the Gov-

ernor's conference some 30 years ago, and former colleague here, Senator Nelson, in front of this committee. My first question would be directed to any of the witnesses who care to respond. It's my understanding that under existing law, if it's not changed, no oil and gas exploration is currently possible in the ANWR area. Does anybody disagree with that?

So, if we leave things as they are, the ANWR area is protected from oil and gas exploration.

Mr. MAHONEY. Senator, that is correct, although the administration has been involved in land exchange negotiations which would, if they were completed, trade out protected lands and turn them over to the private corporations. The administration has said they will not consummate those land exchanges without congressional permission, but they have not said that they don't have the authority to do so.

Senator STAFFORD. All right. As to the town of Kaktovik, and its 92,000 acres, Mr. Van Ness, is oil and gas exploration possible under existing law on those 92,000 acres?

Mr. VAN NESS. Yes, sir; it is. Pursuant to the terms of the 1983 land exchange, by which Kaktovik acquired the surface estate to one township and ASRC, the subsurface estate of four townships, exploratory work—seismic kind of operations exploratory drilling is permitted. Section 1003 of ANILCA, however, adopted in 1980, says that there may be no development or production within the Arctic National Wildlife Refuge, and, therefore, on the Eskimo's lands which are within the Refuge's boundaries.

Senator STAFFORD. Has there not been one exploratory well drilled in the Kaktovik area?

Mr. VAN NESS. Yes, sir. During the winter of 1984–85, and 1985–86, Kaktovik Inupiat Corporation and Arctic Slope Regional Corporation did drill a well approximately fourteen miles east of the village. That well is a "tight hole", meaning it is subject to strict confidentiality requirements.

Senator STAFFORD. Thank you. I'm aware, as I'm sure all the witnesses are, that in the Energy Committee there are some proposals going forward that, should there be oil and gas exploration, and oil and gas found, there be a 50 percent split in royalties between the conservation organizations of the country and, I guess, the oil companies. Quite a change from the original Alaskan statehood provision that the split be ninety-ten. So, I guess I will ask the representatives of the environmental organizations who are here if any of you would support that sort of arrangement should it get out of the Energy Committee?

Mr. MAHONEY. Senator, the proposal, as Senator Johnston's bill currently has it, would give 50 percent of the proceeds to the State of Alaska, put 25 percent into the Land and Water Conservation, 15 percent into various wildlife funds, and 10 percent to the general treasury. We believe this is kind of a secondary issue, and we do not support that bill. We don't think that's the primary focus of the attention here.

Senator STAFFORD. Anybody differ from that? Senator Nelson? Ms. Raisbeck, you do not, either. All right. Would you have any comment, Mr. Van Ness, on the impact of such an arrangement should it be proposed by the Energy Committee on the original

Alaskan statehood arrangement. As I understand it, the split would be 90–10.

Mr. VAN NESS. Under the current law, the split is 90–10: 10 percent of the revenue to the treasury, 90 percent to the State of Alaska. The background is that in 1958–59 when statehood was adopted, things looked pretty bleak in Alaska, and Congress wanted to provide for economic development. ASRC supports the Johnston proposal which is before the Energy Committee now to make that a 50–50 split, and to dedicate 50 percent of those revenues to recreation, to acquisition of refuges, and to wildlife management studies.

There's a pressing, desperate need for this, especially in terms of the lower 48 States, and the Pacific flyway. For the migratory waterfowl which use the North Slope, when they get into Oregon and California, and Mexico, there really is inadequate habitat and wet lands for those species. This presents a much, much greater threat to the migratory waterfowl species than anything that's taking place on the North Slope or that's proposed to take place on the North Slope in the form of development.

That revenue source is incredibly important, therefore, to my clients, the Eskimo people, who subsist on those waterfowl species. Congress should see that there are refuges and proper management and research for all species which utilize the coastal plain for part of the year.

Senator STAFFORD. Thank you.

Senator BURDICK. I'd like to ask Mr. Moses a question. We had a scene like this a few years ago, on the same questions, and some of the players are still here. At that time, the subject matter was Prudhoe Bay. I'm just trying to find out why the facts are different here than they were then. At that time, I recall, in this hearing room, witness after witness testified that the caribou would be more or less wiped out if we passed the Prudhoe Bay bill. Well, they haven't been. As I understand it, they tell me the caribou are doing well. I've heard stories that they stand near the pipeline and get warm. I don't know whether that's true or not. But, tell me, has the Prudhoe Bay bill affected the caribou herds?

Mr. MOSES. Sir, there's a difference between the two herds. I'm concerned with the Porcupine caribou herd. You're talking about the central herd that is near the Prudhoe Bay area. There's a big difference, because the central herd is much smaller, and has a longer range of calving grounds. The Porcupine caribou herd numbers up to about 150,000, or thereabouts, and the calving grounds are very small.

Senator BURDICK. The witnesses didn't tell us several years ago that there was a difference. In fact, they did a pretty good job of convincing me that it would hurn the caribou if we went ahead with that project. Now, I find out it hasn't hurt them. Are we apt to find the same situation here? Just because the herd is smaller?

Mr. MOSES. The Porcupine caribou herd only has a small calving ground on the northern shores of the Yukon Territory and the 1002 areas. If there should be any development in the 1002 areas, it would be pushed back inland and exposed more to predators. It can be quite damaging.

Senator BURDICK. Do you concede today that the caribou in the Prudhoe Bay area have not been hurt by that development?

Mr. MOSES. I'm not familiar with the central herd. I understand it has more ground to cover, and that's the big difference between the Porcupine caribou herd and the central herd.

Senator BURDICK. I'm pleased to have your testimony, but I do recall the very outspoken testimony that if we moved into Prudhoe Bay with development it would destroy the herd. So, I'm questioning now whether that is a fact. Now, you tell me there's a difference in the size of the herd and the size of the area to be occupied. Is that right?

Mr. MOSES. Yes.

Senator BURDICK. That's the distinction. OK, thank you.

Mr. NELSON. Senator Burdick, may I make an observation. I only base my comments on what the game biologists say. There's a fundamental difference, as Mr. Moses already has pointed out, that the central herd is 15,000, which is one-thirteenth the size of the now estimated 200,000 in the Porcupine caribou herd. They are one-thirteenth the size, but they have three times the area of the coastal plain; three times the area to calf in. The biologists say that they have stopped calving, for all practical purposes, in the area where Prudhoe Bay is, but that it hasn't had any significant impact, because that's a tiny percentage of the available calving area to the central herd.

So, you're bringing 200,000 caribou into a million-and-a-half acres, or part of that million-and-a-half acres, whereas you have 15,000 caribou of the central herd in an area three times that size. So, it hasn't impacted on their available calving area.

Serious questions are raised by the biologists—by the critique by Canada—that if you lease the whole coastal plain, you're occupying all the calving area of the Porcupine caribou herd, who calf heavily in the southeast, in the middle part of the range, and some years all the way to the far west. So, it threatens the area available for calving, and Ken Whitten, the game biologists for Alaska, Department of Fish and Game, has testified:

> The Porcupine caribou herd forms huge post-calving aggregations. These huge aggregations move extensively within the coastal plain and foothills to gain relief from mosquitoes, and other insect pests. Biologists believe that the unrestricted access to these relief areas is important to the herd's well-being. Unfortunately, our experience in the Prudhoe Bay area over the past decade suggests that maintaining the functional integrity of the caribou's summer range might not be possible given the widespread surface use requirements for the oil and gas development.

So what he's really saying is that it threatens the Porcupine caribou herd.

Senator BURDICK. I think we've covered this subject, but I simply wanted to say that at the former hearing I attended, I heard dire results for the caribou in the Prudhoe Bay area, which hasn't come to pass. You've given some explanation for that.

Mr. HERRERA. Senator, I was going to pursue the question. In fact, what you say is absolutely correct. The population of the central Arctic caribou herd around Prudhoe Bay has gone up from 3,000 animals, estimated in 1973, to its present population in excess of 16,000—at the same time all that Prudhoe Bay infrastructure was being developed. So, what you say is absolutely correct: the

caribou have not been adversely affected, and they still calf in the middle of the Kuparuk oil field, just adjacent to Prudhoe Bay. That is a scientific fact which I don't think anyone can argue about.

Senator BURDICK. I'm not saying anything. I just asked a question.

Senator MITCHELL. Thank you, Mr. Chairman. Senator Baucus.

Senator BAUCUS. Thank you, Mr. Chairman. I'd like to ask the environmental representatives a basic question as to whether you generally are opposed to any energy development in this area, or are you in agreement with development under certain conditions; that is, certain environmental protections; such as, if certain calving grounds are definitely off limits. Or, if some of the migratory waterfowl and other birds that are there are protected in a certain way. The basic question is: Are you unalterably opposed to any development, or are there circumstances under which you could agree to some development and, if so, what are they?

Mr. MAHONEY. Senator Baucus, we are opposed to development of this place, because it is the only place that has not been subject to development. We believe there should be some balance in land protection—as you're very familiar with being from Montana, with its public lands and wilderness areas—and that there are some areas that should be left alone.

In the case of the North Slope of Alaska, the coast line is 1,100 miles long. Of that 1,100 miles, almost 1,000 miles of on-shore coastal plain has been leased—is being leased, was leased, is producing, has been explored—and now the entire 1,100 miles offshore is being explored as well. So, we believe that some balance requires that some places be left alone.

The analogy we've tried to use were the proposals in the early 1960's to dam the Grand Canyon. The odds on finding energy in the Grand Canyon by damming it are a lot better than finding oil in the Arctic refuge. The odds in the Arctic refuge are 19 percent. But, as you know, if you build a dam in the Grand Canyon, you're going to get energy. And, it's going to be energy that's very close to the Sunbelt, very close to the L.A. power grid. It doesn't have to go through a pipe. It isn't subject to spills. But, the question is: can you have a dam, and can you have a canyon? You can't have both.

Senator BAUCUS. I don't have a lot of time here, so I've got to ask some questions. What's the size of the area in question?

Mr. MAHONEY. The 1002 area is a million and a half acres.

Senator BAUCUS. That's a lot of land.

Mr. MAHONEY. The State lands where Prudhoe Bay is are seven million acres immediately adjacent, and the National Petroleum Reserve west of that is in excess of 20 million acres, and the offshore oil lease areas are in excess of 20 million acres.

Senator BAUCUS. You're right in referring to some of the problems in the State of Montana in trying to find some proper balance between development and protection. But that's exactly what we're trying to do, is find that balance between development and protection. It just seems to me that, given the energy needs of this country, we should go the extra mile to find some way of accommodating competing interests here. I have the same impression the chairman of the committee has, namely that the dire warnings about

the adverse effect on the caribou herd at Prudhoe Bay from the pipeline have not come to pass.

I understand further, as Senator Nelson indicated, that the herds are different, the calving areas are different sizes, et cetera. But, frankly, I am more disposed toward private groups and organizations trying to find some kind of reasonable accommodations, because I think there are competing interests here.

Mr. NELSON. Senator Baucus, let me comment on that. I was in the Senate at the time ANILCA was passed and was handling the wilderness amendment on behalf of then Secretary of Interior Andrus. That later was merged into a larger amendment. I voted for ANILCA, but you must remember we went to great lengths—enormous lengths—in section 304, spelling out the purpose of the refuge. Senator Jackson was deeply involved in that. Then, in section 1002, spelling out in great length the studies that had to be done. In section 1003, the circumstances under which drilling experimental testing and sounding could be done to find out whether there was any oil. There was a very careful caveat that none of that activity could have any serious, adverse effect on the wildlife there.

Congress supported that. At that time, there wasn't anybody that knew anything about the effects of Prudhoe Bay on the caribou herd. It hadn't been studied. The tragedy is, that after mandating the study, we still don't know, because the studies are inadequate. So, people who are concerned around the country, including the environmental movement, are afraid that that herd will be threatened.

Now, it's pretty clear that the Porcupine herd will be threatened, if its calving grounds are occupied. My sole point, in answer to your question about whether we open it under any circumstance, is that, as the rarest and most biologically productive arctic ecosystem of its kind on the face of the planet—and the last of its kind—it has more value than any oil that could be found there.

And I would vote, if I were in the Senate, to designate it a wilderness. However, what Congress asked for was all the facts. Do all the studies, lay all the facts before us, and then we'll make a decision. That hasn't happened. So, my argument is that Congress ought to insist on compliance with the statute that they passed in 1980. Every scientist will agree that the studies are not adequate to make a judgment of the impact upon the wildlife there. So, Congress ought to stop all this business of entertaining legislation to open it up, and say to the Interior Department: complete your studies.

The Interior Department has made a whole series of political decisions. The preliminary draft that came to the Interior Department was changed in many ways. Read the Canadian evaluation of that.

So, I'm saying the only way we're going to get a judgment that Congress can support is to have the National Academy of Sciences, as an independent scientific organization, determine whether the studies are adequate, or are not adequate. More studies ought to be done. They're going to have to come down on that side because I don't know of any scientist who doesn't agree that the current studies are inadequate.

Senator BAUCUS. I appreciate that, and I agree with you that the studies are inadequate, and that the administration recommendations seem to be politically motivated. I agree with all that, but that wasn't my question. My question to the group was whether they were opposed to any development under any circumstances, whatsoever. That's a different question. But, I agree that in the meantime we'd better get more information, more evidence to find out what we're dealing with here, so we can make better decisions. But, my time is up. Thank you.

Senator MITCHELL. Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman. I want to thank each of the panelists for the material you've submitted. I think the eloquence that is in Senator Nelson's testimony, and the quote from Senator Anderson's article, are really very telling. What bothers me is that all too often the suggestion is, well, can't we strike a compromise? I don't think compromise is always right. When you have a precious asset, and somebody says, I want part of it, you may work out a compromise where they get part of it, or they get more than they would have if they hadn't asked for the compromise. But, I don't think some things are subject to compromise.

In this country, we have wilderness areas, where there is no lumbering. I remember going into Senator Baucus's State, to the Bob Marshall wilderness, and that's a wilderness area, and thank goodness it is. Next to it you see where the loggers have been, with the roads crisscrossing back and forth, and that was where a compromise was struck. In the Bob Marshall wilderness, there is no compromise. It's reserved as a wilderness area.

So, it seems to me the arguments in behalf of just keeping this a wilderness area without a compromise are strong.

Arguments are put forth about the need for energy. I think we should pay attention to those facts that are set out, that if we are really serious about energy, we ought to have an energy plan in this country, and we don't have one.

Mr. Mahoney, in his testimony, sets out what can be saved if we really try. Indeed, through conservation, we have made massive savings. Now, I'm not so sure about the facts in Mr. Mahoney's statement, in which he says, if this oil field were brought into section 1002, there would only be energy provided for the United States for, did you say, half a day?

Mr. MAHONEY. No, no. If they found oil—that's the 19 percent probability—the mean estimate is that there's three billion barrels. The field itself might be developed over several decades. But the three billion barrels is equivalent to 200 days of consumption. So, I don't know whether the right way to look at it is a little bit over 30 years, or conceptually that it postpones the day when you have to make some other energy choices by 200 days. But, that's what we tried to say.

Senator CHAFEE. Well, whatever it is, in the total consumption of the U.S., it's relatively modest. As the chairman has said, it would serve those of us who are sympathetic to the cause of preserving this as a refuge—indeed, wishing it were a wilderness—if we could get more ammunition as to what has exactly happened in the Prudhoe Bay area. I personally have been up there and, indeed, the chairman is right. There are those caribou nuzzling up to the hot

pipelines, rubbing themselves, and wandering in and out of the compound. They open the gate, and in come the caribou.

So, the logical question is: if you are dedicated to preserving a wilderness-type area, does this really do any harm? In the facts set forth by Ms. Raisbeck, when she points out the residue of the toxic wastes that are there—and it's a vast quantity of them—the question arises: does it do any harm?

Apparently, they're set aside in compounds of some type. You say that, in 1986, 64 million gallons of reserve pit waste water, often containing toxic subjects, were discharged directly onto the tundra, from the pits on the North Slope. What happens when that occurs?

Ms. RAISBECK. Can I comment on that?

Senator CHAFEE. Sure.

Ms. RAISBECK. The report by the Wildlife Federation and Natural Resources Defense Council does note that the small amount of scientific study that has been done on the toxic waste problem up in Prudhoe Bay indicates that in the area near toxic waste pits, there's evidence that there's toxic materials that are beginning to seep into the tundra in the nearby areas. There have been several problems of leakage among those pits.

The cost of cleaning up those pits is going to be astronomically high. I don't have the exact figures with me, but one company, Chevron, estimated that cleaning up just one exploratory operation at Kaktovik, Prudhoe Bay would cost them $2.6 million or more. Oil companies are already resisting the level of regulation that is on them now, claiming that it is too costly.

One of the tradeoff questions that has to be made here is: how much is it going to cost, if you are going to compromise, and how much are you going to make the oil companies or the Federal Government pay? How much will the price be, and will it be worth it for 200 days of oil?

Senator CHAFEE. Well, I see my time is up. I'd like to return, if I could, for a question later.

Senator MITCHELL. As you members of the panel will recall, I asked each of you to comment on that aspect of the EPA's comment on the Interior Department's report which concluded that cumulative effects are not adequately evaluated in the final legislative environmental impact statement. Mr. Mahoney responded, and I'd like to go down the list of witnesses and ask for a response to that: whether you agree or disagree, and your reasons for that position. Senator Nelson.

Mr. NELSON. As I look through the literature and recited some of the testimony of the witnesses, the cumulative effects question is raised by scientists in almost every instance I've looked at. For example, you have the comments of eight scientists from the Institute of Arctic and Alpine Research, University of Colorado; the Polar Research Center; the Department of Agronomy, Ohio State University, Columbus; Plant Ecology Laboratory. What they say is:

> Although many lessons were learned at Prudhoe Bay of problems related to construction in permafrost regions, and conflicts of wildlife, there are still difficult issues regarding cumulative effects of the existing and proposed oil fields.

The cumulative impacts are of particular concern in the ANWR because several oil fields may affect the wilderness and wildlife resources. This runs throughout comments by scientists. Obviously, to say that we have done something here in Prudhoe Bay, and have discharged into the various pits and so forth millions of gallons of toxic substances and drilling muds and so forth, which are begining to leak and flow around now; and, to say nothing's happened thus far doesn't answer the question of what's the cumulative impact over a period of time.

The Fish and Wildlife Service has a report that should have been out in November, but they kept their hands on it because they didn't like it, and it came out in January. They've done some studies on what's happening to the flora of the area because of these spillages and toxics going in. So, if you don't have an evaluation of the cumulative effects, what's happening today may be of no apparent consequence, but 10 or 15 years from now it may be disastrous.

I think it's clear that that is what the Congress intended to be studied in their mandate of ANILCA.

Senator MITCHELL. Mr. Van Ness.

Mr. VAN NESS. Thank you, Mr. Chairman. First of all, there has to be an end to what you're going to study and for how long in the context of an Environmental Impact Statement, in this case, programmatic Legislative Environmental Impact Statement and a Resource Assessment.

As you indicated in your question, Mr. Chairman, on the issue of cumulative effects and the EPA letter position that the Department should have looked in greater detail at the cumulative effects of the activities offshore in the Beaufort Sea, and also over in the Mackenzie Delta on the Canadian side of the line and the Canadian Beaufort Sea. So, the question is: What is the ambit of cumulative impacts? How far do you go? Do you look at those effects resulting from activities in the Arctic in Russia, or in Western Europe, which contribute, some say, to an air quality problem up there during part of the year?

I don't want to make a defense on behalf of the Department of the Interior's report, and the studies they conducted. But I have looked at them, and they are a very long shelf of studies. They seemed to have made a good faith effort. Should they have done more in terms of studying cumulative effects seems to me a question that reasonable people will have to look at, and say: What is the benefit of doing 5 more years of studies of potential cumulative effects?

They have already studied it for 5 years. They've done base line studies. I think the information provided is adequate and competent for this committee and this Congress to make policy informed decisions. To the extent there are information gaps, this Congress has adequate authority to bring before this committee data, information and witnesses to fill those gaps.

Finally, I would like to say that I had always understood that the resource assessments and the LEIS that the Department has been preparing for five years, is a programmatic statement: that is, a statement to govern the questions associated with the public policy questions. Should this area be opened to development, or should it

be made a wilderness? And, I think it is fully adequate for that purpose.

In terms of specific things to be done up there—leases issued, specific wells to be drilled, roads to be built, or pipelines to be constructed—all of these are going to be the subjects of additional site specific environmental impact statements and additional studies.

It seems to me that you really need operating experience and those detailed statements focusing on specific actions before you can even begin to define what are the cumulative impacts. They certainly can't be defined in the abstract.

It is difficult to have a great deal of confidence in those impact statements when you're looking into a future oil development that is years away and potentially 40 years long.

I think the caribou discussion Senator Burdick had with respect to the fears and concerns of folks in the late sixties and 1970's was well taken. Much of America believed that a caribou could not cross over or underneath a pipeline. Well, experience, as Senator Chafee indicates, shows that they are almost pests up there now when you're trying to land in an airplane, or move around up there. They're like domesticated creatures. And it's not a problem.

Experience is very important, and in the abstract I don't think you can even begin to envision what the cumulative effects are, at least the most important ones. That is true of all the environmental problems we've seen. We don't know what the real problem is until we have had some experience.

Should you do cumulative effects impact statements for the Federal highway program? That is something that really has long term effects. I don't hear people arguing about the cumulative effects of forty years of a Federal highway aid program, but it hits every neighborhood, every State, every count[illegible]n America, and it has real effects in terms of changing neighb[illegible]ods, changing the environment, impacting on wetlands.

Finally, I think we need to keep in perspective here that this is a 19 million acre refuge. In 1980, Congress declared 9 million acres of the refuge to be wilderness, and that includes 30-plus miles of coastline, between Canada and the 1002 area. What we're talking about here is a very small, 1.5 million acre area of the total 19 million acres. It is not wilderness. Congress decided in 1980 to study this area for 5 years, and then to make an informed policy decision as to its future and the needs of the nation.

Senator MITCHELL. I'm afraid I'll have to go to still another round to give everybody a chance to answer the question. I'll yield now to Senator Stafford, if you have any further questions.

Senator STAFFORD. Mr. Chairman, I just want to make sure I understand the situation. Mr. Van Ness, your testimony indicates to me that you believe the studies that have occurred under the 1980 act are adequate. Am I correct in that?

Mr. VAN NESS. I believe they're adequate for Congress to make an informed, intelligent public policy decision on this issue. To the extent they are gaps, or to the extent there is information that you don't think is reliable in that data—and some of the witnesses here have indicated that—Congress through its information-gathering authority can certainly develop the information needed in a matter of weeks.

Senator STAFFORD. Thank you. Senator Nelson, I gathered from your testimony that it was your judgment that the studies are inadequate and that the Congress, to make an informed opinion, needed considerably greater information. Am I correct in that respect?

Mr. NELSON. Yes, Senator. I have no independent expertise. What I say is, our staff and I have searched the testimony, all the literature that is available, and we cannot find a single biologist who's commented on this who asserts or will defend the proposition that the studies are adequate. Well, that ought to tell us something.

We've got oil company representatives who say the studies are adequate. They aren't biologists. We've got all kinds of elected officials who think they're adequate. But the scientists don't think they're adequate.

And, of course, the other factor is that, even when you take the draft assessment, there was heavy pressure from the Fish and Wildlife Service and the BLM because from the word go, everybody knew—all the scientists, everybody else, knew—that what this administration wanted, what Hodel wanted, was a positive answer that we should drill there. They'd made up their mind. That threw a wet blanket over the whole scientific procedure.

Then, comes the draft assessment, and that had statements and reservations that indicated serious implications for wildlife and their habitats. When the final report came up, it went to Mr. Hodel's office, and they said that doesn't look good for us politically, and they modified it. The Canadian assessment asserts that the Interior Department arbitrarily changed the Draft Report. For example, the Canadian critique that was put in the record by the Chairman says:

> Changing the assessment of the impact on snow geese in alternative A, from major to moderate, without any explanation or any new evidence, cast doubt on the credibility of the report.

There are several of these instances. The draft report came out, and Interior didn't like the looks of it even though it was prepared by the Fish and Wildlife Service. So, they just changed it. They said the calving area didn't need to be as big, so they changed it. What scientific evidence supports this? Zero.

So, there's a serious credibility gap here. Obviously the final report doesn't comply with what Congress mandated in ANILCA.

Senator STAFFORD. Thank you very much. Thank you, Mr. Chairman.

Senator MITCHELL. Senator Burdick, do you have any further questions?

Senator BURDICK. I have no other questions. I simply want to thank Mr. Moses and his confederates for coming down here and giving us the benefit of his experience and testimony. Thank you for coming.

Senator MITCHELL. All right. We'll conclude by asking each of the remaining witnesses who wish to do so, to respond to my first question regarding the cumulative effects, and whether or not they're adequately evaluated in the final legislative environmental impact statement. And, we're down to Ms. Raisbeck.

Ms. RAISBECK. In the interest of time, Senator, I will associate myself with the remarks of Mr. Nelson.

Senator MITCHELL. Thank you, Ms. Raisbeck. Mr. Moses, do you wish to comment on that question?

Mr. MOSES. As far as cumulative impacts are concerned, you should consider the fact that even at Prudhoe Bay, the central Arctic cows and calves avoid the installations. The pictures you see and the stories you hear are about bulls only. If this happened to the Porcupine herd, the cumulative impact would be that the cows and calves would leave the developed parts of the calving grounds. This would result in more dead calves, which ultimately would cause a decline in the herd and change its migratory patterns. This would effect all other wildlife that depend on the herd, and also be disastrous to our native communities in Canada.

Senator MITCHELL. Thank you, Mr. Moses. Mr. Herrera, we'll give you the last word on this question.

Mr. HERRERA. Thank you, Mr. Chairman. You know, biologists are practitioners of an inexact science as are geologists. I happen to be a geologist. For any biologist to admit he's got enough data would be an impossibility. I have the same problem myself as a geologist, again with an inexact science. I never have enough information. That doesn't stop me making decisions to drill wells which find oil. The decision to drill at Prudhoe Bay was one based on not enough data. Does that make it a bad decision, or a good one?

Clearly, it was a good one, with hindsight. Cumulative effects are a product of cumulative studies. You cannot recognize them unless you take the sum total of knowledge at that time. You can't suddenly go out and do a study and say, Oh, I've just discovered cumulative effects. You have to know what happened before to recognize changes, both naturally and artificially induced changes.

Surely, it's obvious that you never have the total sum of knowledge at any given time to make a decision. That doesn't stop you from making informed decisions on the basis of the adequate knowledge that you have. I would strongly argue that there is adequate knowledge to make an informed decision on the North Slope of Alaska and certainly on the coastal plain.

One other point which nobody seems to consider, and it's tied into impacts, and so on. If you don't develop the coastal plain of ANWR, it would be similar to considering what would have happened if you hadn't developed Prudhoe Bay. Prudhoe Bay impacts, by everybody's recognition, around 8,000 acres of tundra. There's a secondary impact beyond that. But, if we didn't have that 2 million barrels of oil a day, presumably we would have tried to find it in the lower 48 States.

Perhaps nobody realizes that to find that amount of oil in the lower 48 States would probably involve drilling approximately a million exploration wells, of which 150,000 wells would now be producing 2 million barrels of oil a day. Now, what is the impact in the lower 48 States of those actions? Surely, it is far greater—orders of magnitude greater—no matter how you measure it, than the impact you've seen from the development of Prudhoe Bay. And, I think the same scenario is totally applicable to the coastal plain of ANWR, also.

Except for one thing. Impacts on the coastal plain of ANWR are going to be less than those we've seen in Prudhoe Bay simply because of our increased experience and increased knowledge as a result of cumulative studies.

Senator MITCHELL. Thank you very much, Mr. Herrera. Does any other Senator have any additional questions?

Senator CHAFEE. I have a couple, if I might. Mr. Van Ness, is there any area in the lower 48 that one should not explore for oil in? We've had the example that there's energy in the Grand Canyon, and therefore if we really want energy, we can dam up the Grand Canyon and get some energy. I presume you wouldn't be enthusiastic about that.

Mr. VAN NESS. I think there are a lot of areas that should not be explored for oil and gas in the lower 48 States. First of all, the decisions that this and prior Congresses have made with respect to setting aside certain areas for special purposes, such as national parks, wilderness areas, and so forth, creates areas that obviously should not be developed.

By the same token, many States have made the same set of decisions with respect to State resources and State lands.

Third, I think there are areas of the United States it would be an economic waste to explore because the prospects of finding oil there are so low.

Senator CHAFEE. I can recognize that. I presume that there are some wilderness areas in the United States where there's probably a pretty good chance of finding oil.

Mr. VAN NESS. There may or may not be. Perhaps Mr. Herrera is a better person to answer that. I'm not a geologist, and I can't give you specifics. It seems to me we've made the public policy decision already in those areas that we are not going to have oil and gas development in them because we dedicated them for wilderness or other purposes.

Senator CHAFEE. It seems to me that we as a Nation have decided that in certain areas, even though there might be oil there, we're not going to drill there because of factors that we consider important as a country.

Mr. VAN NESS. I think that's correct. I think that Congress, in making those decisions, looked at the question: was it likely there was going to be oil and gas there, and weighed the values and balanced the issues and made an informed public policy judgment that it was more valuable to designate them as wilderness than it was to have the resource. That varies in time.

During the Arab oil embargo of 1973, Congress wasn't making those kind of decisions. Congress was taking some extraordinary actions to extend the Nation's energy reach and get through a crisis that was very critical. The same thing happened in 1978, during the war over in the Persian Gulf.

So, Congress's policy attitude toward these kinds of issues, that is preservation on the one hand, versus meeting these energy needs on the other hand, changes depending on world conditions and the threat facing the Nation.

Senator CHAFEE. I must say I'm struck by the arguments that were made that this is an extraordinarily unique area. I don't

think anybody has challenged the statements that Senator Nelson has made.

Mr. VAN NESS. Well, I would challenge that statement. I've been to the North Slope many, many times. I've been in the coastal plain area, and I quite frankly think it's a barren desert devoid of wildlife for much of the year. I flew the area for four hours in 1979, for example, and did not see one caribou or other identifiable wildlife. Caribou use the area for a few weeks in late May and spring in some years. But, compared to other areas I've seen in your State, and my State of Washington, you got to fly a long way to see anything up there. It is relatively barren. It's often been referred to as an ice desert.

In 1973, when Congress was considering authorizing the Trans Alaska Pipeline (TAPS), many of the people in the environmental movement proposed that TAPS oil be brought across the coastal plain area, through Canada, and down into Chicago. Arguments at that time were that was the least adverse impact on the fish and wildlife resources up there. And, it kept the pipeline from going through the Brooks Range and Atigan Pass and other areas of incredible beauty.

Senator CHAFEE. Let's hear the rebuttal to that. Mr. Mahoney, or Senator Nelson.

Mr. MAHONEY. The conservation community began exploring northern Alaska for a place to set aside, a place to preserve in the 1930's. The studies for this area were done by the Park Service in the 1950's. The Eisenhower administration strongly recommended that this area be protected, in part because of its extraordinary wildlife, wilderness and scenic values. And, because its geologists said the principal place of petroleum promise was in northwest Alaska, not in northeast Alaska. Those areas were put aside in a series of decisions throughout this century for petroleum.

Finally, President Eisenhower set aside the area the coastal plain is now in as the Arctic range in 1960, eight years before Prudhoe. They did it precisely because of its importance as a natural ecosystem, and they drew the line precisely because of the way in which the wildlife species used the area, and how much of it they used. When the caribou go in, they seem to go up to the Canning river, which is the western boundary. They don't go to Prudhoe Bay. That's where they stop.

Senator CHAFEE. What about Mr. Van Ness's statement about the location for the TAPS?

Mr. MAHONEY. I've heard the allegation. I don't understand it. When the Sierra Club has discussed this at their board meetings, the leaders of the Sierra Club from the Thirties, Forties and Fifties and Sixties argue with each other over who was fighting for this area the longest. No one, to my knowledge, was seriously proposing that this be an alternative.

Senator Stevens, at that time, said putting a pipeline across this place would be like "slashing the face of the Mona Lisa with a razor." He didn't refer to it as a barren waste land.

Senator CHAFEE. Senator Nelson, to you have any comment?

Mr. NELSON. It's interesting that when the proposal was to bring the pipeline and go down through the refuge, the Fish and Wildlife Service in 1977 said it would be a terrible tragedy to mar this re-

markable wilderness area. They opposed it in 1977. In the comprehensive conservation plan for this wildlife refuge, just out in the past couple of weeks, there is a paragraph reporting what a remarkable wilderness area the 1002 area is. So, they're even saying it right now in the comprehensive plan.

On the point that you wouldn't go into the Bob Marshall, or Yellowstone, because it was set aside, the wildlife refuge has been set aside. The Arctic National Wildlife Refuge has been set aside. You can't go into that refuge and drill for oil, unless Congress modifies the law.

So, you'd have to modify the law to go into Yellowstone, the Bob Marshall, Yosemite, Glazier, or any of those areas set aside. You'd have to change the law. You have to change the law to go into the Arctic National Wildlife Refuge because drilling is prohibited.

Now, it's something to say it's not remarkable when about 2 million shore birds nest and feed and stage there, and come down flying over everybody's State. If weren't for that area up there, you wouldn't be seeing those birds. Three hundred thousand snow geese feed, breed, stage there, and that's half the whole Pacific flyway.

The argument was made a few moments ago that we ought to spend this money to improve the habitat in Oregon and Washington because they're getting short of spaces for the geese to land.

That is correct. We are losing our wetlands. But, if you poison the basic resource, which is going on slowly in Prudhoe Bay; if you poison the basic resource on the coastal plain where these birds breed and feed—there won't be any snow geese flying down the coastal plain or shore birds coming down the east coast or west coast.

Senator CHAFEE. Thank you very much. I just want to say finally, Mr. Chairman, that it is important in consideration of all this to remember that we do have two nations involved. As I understand from the testimony, Canada has made a very major contribution to a park for this wildlife.

In anything we do, we should consider what Canada has done, because we want to work in concert with them to the greatest extent possible. Thank you, Mr. Chairman.

Senator MITCHELL. Thank you very much, Senator Chafee. Thank you gentlemen and Ms. Raisbeck. We appreciate very much your coming. The hearing is concluded.

[Whereupon, at 11:40 a.m., the subcommittee was recessed, subject to the call of the Chair.]

[Statements submitted for the record follow:]

STATEMENT OF
TIM MAHONEY
WASHINGTON REPRESENTATIVE, SIERRA CLUB
AND CHAIRMAN, ALASKA COALITION
BEFORE THE
SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
CONCERNING S. 1804
THE ARCTIC NATIONAL WILDLIFE REFUGE WILDERNESS ACT

February 17, 1988

Mr. Chairman, members of the Committee:

I am Tim Mahoney. I am a Washington Representative of Sierra Club, a national environmental organization of 434,000 members. In January, 1987, I was elected chairman of the Alaska Coalition, an alliance of organizations in Alaska and across America which worked to protect Alaska's national interest lands in the Alaska National Interest Lands Conservation Act (ANILCA) and which was reactivated to work for protection of the Arctic National Wildlife Refuge coastal plain. The twenty-two member groups of the Coalition are: American Rivers Conservation Council, Defenders of Wildlife, Environmental Policy Institute, Friends of the Earth, National Parks and Conservation Association, Natural Resources Defense Council, Sierra Club, The Wilderness Society, Alaska Center for the Environment, Arctic Audubon Society, Denali

Citizens Council, Northern Alaska Environmental Center, Southeast Alaska Conservation Council, Trustees for Alaska, American Littoral Society, Animal Protection Institute of America, Appalachian Mountain Club, Washington Wilderness Coalition, AHKE--Society of Outdoor Recreation, Garden Club of America, Indigenia, and Rivers Unlimited. On behalf of these organizations, I speak today in strongest support for S. 1804, the Arctic National Wildlife Refuge Wilderness Act.

Wilderness

The decision over whether to protect or to develop the Arctic coastal plain is one concerning a unique, spectacular wilderness--not one of wildlife and oil technology. The debate is sometimes defined as a "battle over lasts." The oil companies say this is America's last significant, unexplored, onshore oil potential region. We say it is America's last Arctic wilderness. But there is a fundamental difference between the two points of view. What the oil companies mean is that they already have access to every onshore area of significance except this last one. If they gain access here, they have all areas. What we mean is that there is no more. If they gain access here, America loses its last wilderness; we will have none.

When we say it is last, we mean it is unique.

The Arctic Wildlife Refuge is our second largest refuge, perhaps our wildest. Proposals to preserve it date from the 1930's. Conservationists attempted to formally protect it first as a park in the 1950's. The National Park Service studied the area in 1953 but decided it was too remote to be a national park. After bills to make it a refuge passed one House in the 1950's, conservationists succeeded in part when President Eisenhower proclaimed the 9-million-acre Arctic Wildlife Range in 1960.

[Ironically, conservationists seeking to preserve one portion of Alaska's North Slope with abundant wildlife were encouraged to look to the

northeast corner of the state since geologists earlier in the century were convinced that the greatest petroleum potential lay in northwestern Alaska which was designated a Naval Petroleum Reserve. It was transferred to the Department of Interior in 1976 as National Petroleum Reserve-Alaska (NPR-A)].

Today, it remains the one true wilderness on Alaska's North Slope. In the 1980 Alaska Lands Act, Congress formally designated wilderness for the remainder of President Eisenhower's withdrawal outside of the coastal plain in 1980 and added another 10 million acres to the range, redesignating it as the Arctic National Wildlife Refuge.

Even the Department of Interior's prosaic draft 1002 states, "The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the various arctic ecosystems in North America." Let me stress the word only. This is a unique place, not a collection of animals, but a place.

But the coastal plain portion of the refuge, while a portion of the whole, has its own special attributes. As the draft 1002 report states, "The coastal plain in its present state has outstanding wilderness qualities: scenic vistas, varied wildlife, excellent opportunities for solitude, recreational challenges, and scientific and historic values."

That sounds as if it could apply to many places in Alaska, but the report points out what makes the place special. "Most of the major wildlife species occurring on the refuge (caribou, moose, brown bears, wolverines, wolves, muskoxen, polar bears, and numerous species of birds) use 1002 area habitats for all or part of their life cycles (calving, nesting, breeding, staging). The 1002 area is the most biologically productive part of the Arctic Refuge for wildlife and is center of wildlife activity on the refuge. Caribou migrating to and from the 1002 area and the postcalving caribou aggregation offer an unparalleled spectacle. The area represents

many opportunities for scientific study of a relatively undisturbed ecosystem."

Consider the words that escaped the political censors at the Department of Interior: "the only conservation system unit;" "the complete spectrum of ecosystems;" "the most biologically productive;" the "center of wildlife activity;" "unparalleled spectacle."

First, we have narrowed our wilderness opportunities on America's Arctic Ocean coastal plain to just one place because every other place has been devoted--by federal or state law--to petroleum exploration and development. But the only place left is exceptional; it is the best wilderness.

This presents a bit of a public relations dilemma for a group like the Alaska Coalition. What make this possibly the continent's greatest wilderness are its productive and complete ecosystems and the sheer variety and abundance of its wildlife: the polar bears, the muskoxen, the wolves, wolverines, the millions of birds. And most distinctive of all, its caribou herd, the last free roaming arctic herd not yet subjected to petroleum exploration and development.

Conservation organizations work on many important wilderness areas, but there is none like the Arctic Refuge. And there is no wilderness within the refuge quite like the coastal plain. Perhaps the best explanation of its significance comes from the book, Arctic Wild, by Lois Crisler, who lived in and explored the area before it was designated a refuge.

> This was the first 'great' wilderness I had ever been in. Yet all our married life we had lived in 'wilderness,' first in the Olympics in Washington State and then in the Colorado Rockies. But it was captive wilderness. This was free. It sounds obvious but is known to few: free wilderness gives you the experience of freedom. I could not know freedom consciously yet, though I felt it. It is a vital experience totally different from anything experienced in civilization; it has to grow on you. A starving child

does not instantly experience bounding health after one good meal.

> Great wilderness has two characteristics: remoteness, and the presence of wild animals in something like pristine variety and numbers. Remoteness cannot be imitated in cheap materials; and wilderness without animals is mere scenery.

The oil company publicists have tried to take the remarkable wildlife for which this area is famous and turn the issue into one of game management. And in discussing all of the impacts on wildlife populations which the Department of Interior in its draft report stated could happen--the loss of 40% of the caribou, of half of the muskoxen, half or more of the wolverines, unknown impacts on the polar bears, loss of one quarter of the snow geese--the list goes on and on, and the cumulative effects of pulling first one strand out of the web, then another, are unguessable. But even we can forget, in the arguments between scientists, that we are talking about our last wild place; it is really the undisturbed wilderness habitat that makes it special for wildlife, not the other way around.

The subtle pitch from the oil companies and from the Department is, "It's all right to destroy wilderness--of course, wilderness will be destroyed--so long as the animals aren't extinguished. And the track record at Prudhoe is that except for predators, we've managed to keep many animals alive."

We have been asked: "How many North Slope caribou do we need?" I guess the questioner is really asking, "How many caribou can we afford?" Our answer is, "one herd." We ask that in one place, we have a large healthy herd of animals living in its wilderness with its ecosystem intact. Other caribou in other places may survive. Their predators and associated species may or may not survive--but it will not be because we as a people have decided that there is a specific place for them on Alaska's Arctic coast. It will be because they survived the development that is our

principal public and corporate policy everywhere else on America's Arctic coast.

In the years to come, as other fields come on line, as pressures grow to open the Dalton Highway, as other transportation corridors in other parts of the north are debated, the relative health of other wildlife species will likely decline as habitat is damaged. Only one of the great herds--the Porcupine herd of the Arctic Refuge--has all of its U.S. habitat protected.

We have compared the proposal to develop the Arctic coastal plain with the idea--debated in Congress twenty-five years ago--of flooding the Grand Canyon, for its enormous hydroelectric potential.

This was no 19% chance of finding energy reserves, as is the Arctic Refuge. Here, the odds on attaining hydropower are 100%; build the dam, turn on the generators. And hydro lasts a long, long time. It's not the same finite reserve as an oil field, no matter what its size. Of course, it's cleaner than petroleum processing and it's closer. Needing no pipeline, Grand Canyon is immediately accessible to the Southern California power grid.

The power companies behind that proposal tried not to portray it as a black and white choice--the dam would be outside the park, not in it--only the reservoir would back up inside. And of course, the canyon wouldn't be completely flooded. The proposal would have flooded 600 feet. We'd still get a view--just a different view.

I've used the Grand Canyon for dramatic effect, but it's not the only choice between resource development and protection--not mitigation--of natural values. The choice was the same at Hell's Canyon National Recreation Area--hydro or wilderness--where the canyon is now a Forest Service wilderness. Congress has in the course of the last six years debated geothermal leasing amendments and particularly geothermal energy development at Island Park, Idaho, next to Yellowstone National Park; not

inside the park but suspected of being connected through the underground plumbing to the geysers at Yellowstone. And in World War II, policy makers seriously debated logging the magnificent old growth forests at Olympic National Park--for national security production reasons.

There are two important differences between the Grand Canyon analogy and the Arctic. First, more Americans know about the Grand Canyon. Many have visited it, and most have seen pictures of the unusual scenery. Second, Americans can easily visualize the impacts of a reservoir on the Grand Canyon. It's a stark decision. We really would not debate mitigation or compromise--you don't build half a dam.

Arctic is less well known--now--just as places such as Grand Canyon, Okefenokee, Yellowstone, or Olympic were once known to only a few. And the imagery that the oil companies and the Department have put forward--exploration, few impacted areas, Prudhoe Bay stipulations, wildlife mitigation--are more complicated and hard to visualize than a reservoir and a canyon. But the impacts are real and complete. To say that we can have oil and caribou is akin to saying we can dam the Grand Canyon and still look at rocks.

Development

The coastal plain is a narrow strip of land between the mountains and the sea--not like the wider plains of Prudhoe in the Central Arctic or the NPR-A in the west.

The areas proposed for exploration and potential development by the Department range across the full 100-mile length of the plain. Three separate drilling areas are linked by haul roads that bisect the area. Under the full leasing option, we are talking about a massive industrial complex from east to west: 100 miles of main pipeline, 380 miles of roads, collector lines, seven large production facilities and four smaller ones,

four airfields, two ports with salt water treatment facilities, and 40 to 50 million cubic yards of gravel to be dug up and moved.

Of course, if the area were leased, different companies might choose different strategies for development; certainly they would attempt the most cost-effective methods and the development might vary. Under the proposal of the Department, we are being asked to turn this narrow, vital, unique and last wilderness into an industrial complex.

A decade agao, Congress was told there was a 97% chance of a commercial oil find. Unfortunately, exploration has not yet produced economically viable finds in the NPR-A. But there is an ongoing leasing program in the Beaufort Sea by the federal government outside the three-mile limit and by the state inside the three-mile limit.

Significant onshore discoveries have been made on the state lands of the central Arctic but being privately held leases, development decisions are not public decisions.

Exploration

You have been told that exploration is not as harmful as development. We should discuss the problems of exploration itself, but the Secretary of Interior has not asked Congress to arrange for exploration of the area. He has asked to lease the area, with full rights for development going to private interests.

But even if there is not a commercially recoverable drop of oil--and the Department admits that the odds on this are 4 in 5, 81%, and higher if the price of oil stays lower than $33 per barrel--the impacts could be severe and long-lasting.

Consider the two mundane building materials for exploration: fresh water and gravel. Water is used to build ice structures that are

temporary--used in the winter--such as drill pads, roads, airfields, and foundations for camps. The Department's draft "1002" report acknowledges the Arctic coastal plain--unlike Prudhoe of NPR-A--lacks adequate fresh water and calls this "a major engineering problem."

The area receives little snow or rain, has few lakes and its rivers are short, the mountains being so close to the sea. The report does not bother to consider the environmental impacts of obtaining the 15 million gallons needed per well or the millions more needed for temporary roads, airstrips, and camps. The Department sugggests coastal de-salinization plants or "innovative methods."

We are told that the most likely innovative method would involve building dams on the rivers, diverting the waters into reservoirs which might need to be scoured out to make them deep. While there are animals present at the rivers in wintertime as well as summer, this construction will have to take place in summer and will radically affect the land.

According to the Department, "multi-winter" drilling and "permanent" roads, airstrips, and facilities must be built with gravel--35,000 cubic yards per well. But there is no gravel on the surface of the tundra--gravel must come from the rivers also, or the beaches, or the mountains, in quarries, borrow pits, strip mines.

Even if no oil were found, exploration activities would go forward in all of the leased areas. The Department shows the "play" ranging across the entire plain. The only limits would be self-imposed by the various companies depending on economics. Exploration could occur over several decades--hardly a temporary problem.

At an Energy and Natural Resources Committee hearing on July 22, Roger Herrera of Standard Oil discussed with Senator Wyche Fowler the oft-repeated probability that there is a 19% (one in five) likelihood of

finding a commercially viable oil deposit, or as we point out, the 81% likelihood that there is none.

Mr. Herrera said:

> It is going to be more difficult to find a commercial oil field in the coastal plain than the 19% suggests....In general terms, the figures that the government produced...are certainly agreeable to us...they are in the right ballpark.... It gives you a lot of play to be as optimistic or as pessimistic as you like....a one in five chance of finding a commercial oil field on the coastal plain is rather optimistic....I would suggest that we cannot go in there prepared to drill 5 wells and say, okay, we have got our one in five chance. We have exhausted that, and now that is the end. We have got to be able to go in there and be prepared to drill based on the complication of the geology 20 or 30 wells before we can say there is no commercial oil in this area. So my answer is one in 30.

EPA, in its critical comments contained in its June 1 letter, laconically states: "Significant shortages are acknowledged but the final LEIS has not presented an adequate analysis to show whether water quantity/gravel quantity are sufficient to support the recommended action. The final LEIS assumes that major adverse effects can be handled in a manner which will not result in adverse impacts to water quality or habitat."

Some members of Congress have proposed methods of exploration without granting immediate leases. Beyond the environmental concerns over the exploration itself, such an approach historically has not been satisfying to advocates of oil development.

One need only examine the history of the National Petroleum Reserve-Alaska to see this in action. The NPR-A was once a true reserve; naval policy was to leave any deposits in the ground, for the same reasons we fill the Strategic Petroleum Reserve today--to have oil in reserve rather than use it up.

The area was explored by the government in the 1970's. No significant deposts were found (despite what I am told was a 97% probability, not a 19% probability.) But that did not stop the oil industry from desiring leases.

The House of Representatives passed legislation in 1979 as part of the Alaska Lands legislation creating a wildlife refuge in the area but granting leases. The Senate Alaska Lands Act--ultimately to become law--dropped the provision. But at the behest of Senator Ted Stevens, a leasing directive was inserted into the FY 1981 Interior Appropriations legislation and the area was leased.

The moral is that government exploration does not resolve political pressures, and the oil lobby will continuously press for full leasing and development rights, despite exploratory programs, or their results.

Energy

Development and wilderness proposals for the Arctic have been considered by Congress before. When the U.S. was last in the vise of the OPEC oil embargo and the Iranian hostage crisis, the House passed wilderness legislation for the coastal plain as part of the Alaska lands legislation.

The Carter Administration strongly supported the designation of the coastal plain as wilderness at a time when our nation was considering legislation for the OCS leasing program, the Synfuels Corporation, the Energy Mobilization Board, and the Clinch River Breeder Reactor. Sierra Club did not agree with every aspect of the Carter energy program, but we recognized that it attempted balance, seeking enhanced production, conservation, and alternative energy sources.

Today this Administration says that we risk a future energy crisis, a claim most environmental organizations would not dispute. But its proposals for grappling with that crisis are half-hearted and one-sided. This Administration recommends opening new areas to development, while

relaxing conservation alternatives. This is a policy David Brower refers to as "strength through exhaustion."

Testimony before the Interior Committee by Christopher Flavin of the Worldwatch Institute contrasts this approach with conservation.

> Recent experience and numerous analytical studies show clearly that improved energy efficiency is the fastest and least expensive means of reducing dependence on foreign oil. The energy efficency of the U.S. energy economy has improved by a staggering 24 percent since 1973, saving the equivalent of 4 billion barrels of oil in 1987 alone, or 11 million barrels per day. This is 38 times the potential annual contribution from ANWR, and many studies indicate that energy efficiency's contribution could be doubled to the equivalent of more than 20 million barrels of oil per day by the year 2000....
>
> There are a range of energy efficiency programs that Congress and the Administration could enact to meet comparable or far greater oil needs than can be met by developing ANWR. The single largest potential is in transportation -- which now uses about two-thirds of U.S. oil. The efficiency of the U.S. automobile fleet now averages about 18 miles per gallon, and continues to increase slowly as more efficient cars developed in the early eighties replace the less efficient ones on the road. However, the Administration has slowed down this progress by relaxing new car standards from 27.5 miles per gallon as mandated by Congress to just 26 miles per gallon. Other countries, particularly Japan, continue to make progress on the automotive efficiency front, and the U.S. still has one of the world's least efficient automobile fleets.
>
> A one mile per gallon improvement in U.S. automobile fleet efficiency saves about 5 billion gallons of gasoline each year or about 130 million barrels of oil. A more ambitious plan to improve efficiency by 10 miles per gallon could reduce oil use by 3.5 million barrels of oil per day or four times the ANWR contribution. Moreover, an improvement in automobile efficiency will save oil indefinitely, whereas ANWR is projected to have a limited 30-year lifespan. As automotive technologies are further improved in the future, additional oil can be saved in this way. Current technolcgies already made 40-mile per gallon cars economical, and so, given a national commitment to lower oil consumption, these savings can be pretty well guaranteed, an interesting contrast to the 19 percent chance of finding

exploitable oil in ANWR. Raising the fleet efficiency to this level by the year 2000 would just about compensate for the entire 6.5 million barrels per day of lost production now projected.

A barrel of oil saved -- is saved. A barrel of oil used is gone. It is non-renewable. A barrel of oil used without reasonable conservation measures is a barrel wasted.

Conclusion

To return to our Grand Canyon analogy, this country chose not to dam and thus destroy a natural wonder--the Grand Canyon--that might be our greatest undeveloped hydroelectric resource. But that is not to say that we did not dam the Colorado River. Upstream and downstream, throughout its thousand-mile length, the once mighty Colorado has been dammed and harnessed for energy and agriculture so that the water no longer reaches the Gulf of California. But we not only left one dam site alone, we preserved it as a National Park, in recognition of its splendor.

And while this nation is ever more conscious of energy than it was in the early 1960's, neither Congress nor the Department of Interior has suggested we made the wrong decision then. The value and appreciation for our natural wonders increase also. Who believes we set aside too large an area for the Grand Canyon, Yellowstone, the Everglades complex of park, preserve and refuge, the Okefenokee Refuge, the critical waterfowl refuges of the northern plains, the coastal barrier system?

Their value to us and for our children increases steadily over time as much or more than energy costs increase.

Congress has listened to the petroleum interests again and again in Arctic Alaska. First, with the 7 million acre state selections of the central Arctic, then with the exploration and leasing of the 27 million acre

National Petroleum Reserve, then with the OCS leasing programs of 24 million acres in the Beaufort Sea. Now the entire 1100-mile coastline offshore and onshore has been devoted to energy exploration and possible development--except one place.

Prudhoe Bay is not static. New fields are coming onto production. Other fields, such as the giant West Sak, need higher prices and better technology. We assume the industry will continue to explore in the Beaufort Sea. The state has only last summer leased Camden Bay. Why should we not wait to see what evidence of oil these ongoing operations bring? And if oil is hit, why don't we see how large and industrialized the North Slope will become, and what are the problems of overall impact, mitigation, and reclamation? While Endicott or Kuparuk may be less spread out themselves than earlier operations, the Prudoe Bay complex grows and grows, onshore and off. And it will continue to grow. This summer, we had tourist tour buses on the Dalton Highway haul road. The days of public access are probably not far away. Over time, the value of one last undisturbed wild place will grow.

There were those 100 years ago who said Yellowstone was too remote to deserve protection. Now we know we didn't protect enough. The natural values of the Arctic National Wildlife Refuge are known and world class. On the other hand, its energy values are highly speculative. We believe that the evidence shows that the destruction of this magnificent wilderness would follow exploration. We believe balance demands that one place should be set aside--one place on Alaska's North Slope should be protected. This place, the last one.

Thank you for this opportunity to present our views.

THE WILDERNESS SOCIETY

STATEMENT OF GAYLORD NELSON, COUNSELOR OF THE WILDERNESS SOCIETY, BEFORE THE ENVIRONMENTAL PROTECTION SUBCOMMITTEE OF THE ENVIRONMENT AND PUBLIC WORKS COMMITTEE, ON THE ARCTIC WILDERNESS BILL (S-1804), FEBRUARY 17, 1988

Everyone is familiar with the statistical speculation about the oil potential of the 1.5 million acre coastal plain of the Arctic National Wildlife Refuge. The 1002 Assessment states that there is 19 percent chance that a commercially producible supply of oil might be found. If such discovery is made, then design models make further percentage predictions of how much oil might be produced at certain inflation rates and price assumptions. Under one scenario, if commercially producible oil is found the model predicts a 75% chance of finding 1.12 billion barrels of oil; a 50% chance of finding 2.21 billion barrels; a 25% chance of finding 4.24 billion barrels. None of these numbers mean very much. At best they are guesses based upon the careful weighing of a collection of imponderables. The last estimates of this kind that I recall were in the National Petroleum Reserve--Alaska report which concluded there was a 97 percent likelihood of finding producible oil. This field, located just west of Prudhoe Bay, was expected to contain three times as much oil as the current predictions for the Coastal Plain. This reality is this: 65 holes have been drilled, and each one has been dry. The oil industry is no longer bidding on leases for this field.

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However interesting this numbers speculation may be it isn't particularly relevant to the critical issue Congress must decide. Whether the 1002 Coastal Plain contains some or a lot of oil the issue remains just the same. It is this. Should we, under any set of reasonable ball-park assumptions about the oil potential of 1002, compromise the integrity of this rare ecosystem in order to extract it?

Those who say yes claim the national security is at risk and it is urgent we move promptly to protect ourselves against all kinds of dire circumstances. If, indeed, the security of the nation actually turns on finding a six- or 12-month supply of oil in this Arctic Wildlife Refuge then the battle has already been lost. This, of course, is pure nonsense. Six years ago Interior Secretary Watt used that argument to justify his proposal to open designated wilderness areas for gas and oil leasing. Congress didn't buy his argument and three times passed riders on appropriations bills to prohibit leasing. This year Interior Secretary Hodel is back with Jim Watt's national security argument again.

One is entitled to wonder about this Administration's concern over energy security when it is noted that it has no long-term energy conservation plan, no long-term alternative energy policy, vigorously opposed legislation to increase the energy efficiency of appliances and rolled back the mandated automobile mileage standard from 27.5 miles to 26.

In 1985 the Department of Energy stated that energy conservation "has proven to be the most expeditious way to reduce the need for new or imported

energy resources; and in fact it now contributes more to balancing our national energy ledger than does any single fuel source". Yet a few months ago when Deputy Secretary of Energy William Martin was asked by the Senate Energy and Resources Committee about the Administration's ideas on conservation and renewable energy he stated the Administration has "no specific proposals to help those sectors at this time". So much for Administration worries about national security.

For purposes of addressing the pending issue that Congress must decide, let's assume that there is a world class oil deposit of 3 billion barrels in 1002. Over the 30-year life of the oil deposit that would represent an average of about 2 percent of our current annual consumption of oil.

If Congress were to mandate, as it surely should, that the fleet average for all new household vehicles shall be 30 miles per gallon starting with 1993 production models that would save 11 billion barrels of oil by 2030, the projected life of any significant oil find in 1002. Ironically, a 27.5 mile fleet average instead of the Administration's 26 miles would save 4.6 billion barrels during the same period. If a 6 billion barrel deposit were found that would still be 5 billion barrels less than the 11 billion that could be saved by a 30-mile fleet average during the life of the oil field. And, of course, the savings would continue after the field was exhausted. A 35-mile fleet average would save 22.2 billioh barrels during the life of the field.

The technology for achieving these savings in automobile consumption is already here, in place and being used. Compared to the rest of the world we are a laggard nation in automobile fuel economy.

Doing something decisive and effective about energy conservation, especially automobiles, involves some difficult political decisions but they will look easy compared to the choices we will face if we continue to procrastinate.

A policy that continues primary emphasis on digging up a little more fragile land for a little more oil is not a substitute for a sound long-range energy program and, in fact, will perpetuate our increasing dependence on foreign oil by creating the illusion that we are doing something meaningful.

Pretending to address the energy issue by drilling in the Coastal Plain of the Arctic National Wildlife Refuge would be at the same time an act of self-delusion and a tragic degradation of a unique world resource. Whatever oil may be found it will not resolve or significantly affect any perceived national security problem. It will only further deplete that dwindling supply of the planet's rarest commodity -- a complete and balanced ecosystem unaltered by human activity.

Unlike the Arctic Refuge, not a single national park, national forest, wildlife refuge or designated wilderness in the lower 48 states qualifies as a complete and balanced ecosystem unaltered by human activity. They are all fragmented, compromised, incomplete ecosystems surviving as little show piece islands increasingly degraded by incompatible external and internal human activities. The Arctic Refuge stands alone as a complete, pristine Arctic and sub-arctic ecosystem, unmatched by any other on the planet.

Interior Secretary Hodel argues that the national interest requires that we explore and exploit all promising gas and oil potential. If we do not we may as

well hang out a sign telling the Petroleum Exporting Countries: "Take advantage of us because we lack the will to take care of ourselves."

It is time we recognize that there is no end to this rationale for exploitation of any resource that is available and profitable without regard to long-term environmental consequences. Indeed, Hodel's apocalyptic rhetoric logically applies with equal force to all nationally protected conservation units -- Yellowstone, Yosemite and Glacier National Parks, all designated wilderness, including the Bob Marshall, and the whole wildlife refuge system. If we are going to drill the Arctic Refuge there is no rational reason to exempt our parks or any other potential source of gas and oil. After all, there is no other conservation unit in the United States as rare or fragile or more important as a world conservation resource than the Arctic Refuge. However, if Mr. Hodel has come before Congress to propose drilling for gas and oil in our national parks and other conservation units it would have been dismissed as a bad joke. For all of the same reasons it is an equally bad joke to propose drilling in the Arctic National Wildlife Refuge.

Even the Interior Department Draft Assessment of 1002 states that "The Arctic Refuge is the only conservation system unit that protects, in an undisturbed condition, a complete spectrum of the various Arctic ecosystems in North America." It further states that this area is "the most biologically productive part of the Arctic Refuge for wildlife and is the center of wildlife activity on the Refuge".

In 1977 the U.S. Fish and Wildlife Service successfully opposed the routing of a gas pipe line across the Arctic National Wildlife Range stating that "such

a crossing is clearly not compatible with the basic purpose of the Arctic Range". . . The Fish and Wildlife Service continued saying, "we do not believe that the long-term national interest would be served by committing this unique area to development for short-term benefits when its outstanding values for wildlife and wilderness would be forever lost. To protect our public trust and to exemplify our good conscience as concerned ecologists, we must object strongly to any development which would theaten the integrity of the Arctic National Wildlife Range". . . "such activity would destroy wilderness values and irretrievably disrupt many wildlife populations and their habitats". . . this Arctic Range is "the last unspoiled area of its kind in the entire Northern Hemisphere".

That says it all. It is, in fact, literally the very last of its kind. Once compromised we will never again see on the planet a comparable Arctic ecosystem representing tens of thousands of years of nature's intricate evolving works unaffected by human activity.

Several years ago Joseph Wood Krutch made a telling observation pertinent to the issue before us. He said, "If people destroy something replaceable made by mankind, they are called vandals; if they destroy something irreplaceable made by God, they are called developers."

There are many landscapes, many wildlife habitats, many undisturbed natural areas far more valuable to mankind than any commodities that may be extracted from them. This Arctic Coastal Plain is such a place. If it is not, then I know of no other. If fully developed, several thousand people will live

and work on the Arctic Plain. Huge amounts of gravel will be mined and roads built for heavy equipment; millions of gallons of polluted and toxic water and drilling mud will be stored in fragile ponds and washed away into bird and fish habitats. All of these activities will have serious environmental consequences that cannot be predicted or measured. To argue the proposition that these activities can go on for thirty years without major, permanent adverse consequences would be challenged by every ecologist I know of in this country. Indeed, the Interior Department report states: "The existence of oil facilities and activities would eliminate the opportunity for further scientific study of an undistrubed ecosystem."

The question Congress must answer is this:

Do we want to save this rare and remarkable ecosystem in its perfectly natural condition for its intrinsic, esthetic, scientific and philosophic values or do we want to compromise it for its transitory commercial values? We can't have it both ways. We have literally thousands of examples of compromised and degraded ecosystems and almost none that are not. The choice should be clear and simple.

During the past 40 years as an observer and sometime participant in the debates and conflicts over the issue of exploitation of commodities from the public lands versus the preservation of natural habitats the argument has always been the same. Those who insist that all marketplace commodities should be exploited invariably argue that the economy or national security or both require it. They have won most of the arguments in the arena of public lands debate and

practically all of them in the private sector. The result is that very little of natural America is left. We have colonized almost every nook and every niche. Nobody argues that we need not commercially utilize any of our commodity resources. The question is: under what circumstances and guidelines should commodities be developed and under what circumstances should they not. The tragedy is that a major portion of the disastrous environmental damage done to the nation in the name of the economy or national security has been unnecessary, economically costly to the nation and degraded the quality of our lives.

Some twenty odd years ago I was beneficiary of the good fortune to serve on the Senate Interior Committee with one of the most distinguished and influential conservationists of our time, Senator Clinton Anderson of New Mexico, then Chairman of the Interior Committee. He was the most important moving force in the Senate behind the Wilderness Act of 1964. A year before it passed he wrote an article for the July 1963 issue of American Forests. What he wrote should be read, reread and pondered by everyone concerned about our future.

> Conservation is to a democratic government by free men as the roots of a tree are to its leaves. We must be willing wisely to nurture and use our resources if we are going to keep visible the inner strengths of democracy.
>
> "For as we have and hold dear our practices of conservation, we say to the other peoples of the world that ours is not an exploitive society -- solely materialistic in outlook. We take a positive position -- conservation means we have faith that our way of life will go on and we are surely building for those we know will follow. . . .
>
> "There is a spiritual value to conservation and wilderness typifies this. Wilderness is a demonstration of our people that we can put aside a portion of this which we have as a tribute to the Maker and say -- this we will leave as we found it.

"Wilderness is an anchor to windward. Knowing it is there, we can also know that we are still a rich nation, tending our resources as we should -- not a people in despair searching every last nook and cranny of our land for a board of lumber, a barrel of oil, a blade of grass, or a tank of water."

-- Senator Clinton P. Anderson of New Mexico in American Forests, July 1983

I suggest that it is not too late to save something rare, beautiful and irreplaceable that cannot be priced in Adam Smith's marketplace.

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JACOB ADAMS
PRESIDENT
ARCTIC SLOPE REGIONAL CORPORATION

TESTIMONY
ON
DEPARTMENT OF THE INTERIOR'S REPORT:
"ARCTIC NATIONAL WILDLIFE REFUGE:
COASTAL PLAIN RESOURCE ASSESSMENT AND
LEGISLATIVE ENVIRONMENTAL IMPACT STATEMENT"
AND
S.1804

December 10, 1987

HEARING OF THE

Subcommittee on Environmental Protection
Committee on Environment and Public Works

My name is Jacob Adams. I am an Inupiat Eskimo from Barrow, Alaska. I appreciate the opportunity to submit testimony for the record on the Subcommittee's hearing on the Department of the Interior's Section 1002(h) Report on the future status of the Coastal Plain study area of the Arctic National Wildlife Refuge ("ANWR") and on S.1804, a bill to designate the Coastal Plain study area as "Wilderness."

1. Introduction

By way of background, I serve as an elected Assemblyman for the North Slope Borough government. I appear today, however, in my capacity as President, as a shareholder, and as a member of the Board of Directors of Arctic Slope Regional Corporation ("ASRC").

ASRC is one of twelve regional Native corporations in Alaska. ASRC has 3,700 Eskimo shareholders living in eight Villages on the North Slope. Our Villages are located near the Canadian border in the east, near the Soviet Union in the west and in the Central Arctic. The Village of Kaktovik is located to the east on Barter Island. Kaktovik Inupiat Corporation ("KIC"), the village corporation for Kaktovik, owns 92,160 acres of surface lands within the boundaries of ANWR and adjacent to and partially within the 1.5 million acre Coastal Plain study area. ASRC and its shareholders own the subsurface or mineral estate in these lands.

2. Background

ASRC and our Village Corporations were created pursuant to the Alaska Native Claims Settlement Act of 1971 ("ANCSA"). Enactment of ANCSA legislatively extinguished the Inupiat Eskimo people's "aboriginal title" to Prudhoe Bay and my peoples' land claim to virtually all of the 56 million acres of land on Alaska's North Slope.

In compensation, the Inupiat Eskimo people were granted the right to select approximately 5 million acres of land on the North Slope and received a modest cash settlement to be paid over eleven years from Federal appropriations and State mineral revenues. Our right to select our land entitlement was extremely limited. The best North Slope lands were not available to ASRC and its shareholders. The most valuable lands had previously

been leased to oil companies or selected by the State of Alaska (1.65 million acres). Other North Slope lands were set aside by the Federal government for Wildlife Refuge purposes such as ANWR (8.5 million acres); for military purposes such as the Naval Petroleum Reserve-Alaska ("NPR-A") (23 million acres); or placed in some other restricted or withdrawn status which made them unavailable for selection by the Eskimo people.

In return for this settlement -- which was a necessary pre-condition before commercial oil development could proceed following the 1969 oil discovery of Prudhoe Bay on the North Slope -- our claim of aboriginal title to the oil fields at Prudhoe Bay, at Kuparuk, at Milne Point and in other areas was extinguished. These oil fields now produce almost 2 million barrels per day ("B/D") of crude oil -- more than 23 percent of the Nation's total production. In 1985 alone, these fields produced crude oil worth in excess of $16 billion.

I am submitting for the hearing record as Appendix A* a brief chronology on the State's history, the emergence of Native corporate institutions, and the record of oil development in Alaska.

3. Subsistence Use of the North Slope's Resources

Like many of my relatives and friends, I am a subsistence hunter and a whaling captain. As the North Slope's subsistence users, my people are also the land's historic stewards and the guardians of its wildlife.

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*Attachments to this statement have been retained in committee files.

The Eskimo people of my generation have, however, had to learn to live in two worlds. We have learned to speak English, but at the same time, we have tried to preserve our Inupiat culture, tradition and language. We have accepted appropriate technology, but we remain subsistence hunters. We now have a cash economy, but we still live by the tradition of "sharing" which is the Inupiat Eskimo way.

Much of our life today is tied up in corporate activities, in managing our lands, in dealing with the State and Federal governments, and in trying to make a living in the now deeply depressed cash economy that North Slope oil production brought to the Eskimo people.

We have seen many changes. Some are welcome, some are not. Above all, we still try to live by our traditions, to maintain our culture and to teach our children respect for our traditional way and for themselves.

4. ASRC's Shareholders' Interests in the Coastal Plain

As the historic residents of the North Slope and the Coastal Plain, and as private property owners, our shareholders have important interests in the decisions of this Congress on the future status of the Coastal Plain study area:

- The Village of Kaktovik, with 210 Eskimo residents, is located within ANWR and adjacent to the Coastal Plain;
- The people of Kaktovik are dependent on the caribou, on sea mammals, and on the fish and wildlife resources of ANWR and the Coastal Plain for their subsistence;

- ASRC and KIC are the owners of fee title to 92,160 acres of lands located within ANWR and within and adjacent to the Coastal Plain study area; and
- Our Kaktovik private lands are highly prospective for major oil and gas discoveries and represent my people's best prospect to participate in the economic development of our ancestral lands which has been underway since the early 1960's by non-Eskimo interests.

Our interests in the Coastal Plain study area and our views are set forth in a report prepared by an ASRC subsidiary and issued in June of 1986. This report is entitled The Arctic National Wildlife Refuge: Its People, Wildlife Resources, and Oil and Gas Potential. I am submitting copies of this report for the hearing record as Appendix B to my testimony.

This report is factual and objective in assessing the human, wildlife, economic and national security values the Congress should consider in making decisions about the future use and management of the Coastal Plain study area. My views and ASRC's shareholder's views on policy issues are summarized in the Preface to the Report.

5. ASRC's and KIC's Lands in ANWR and the Coastal Plain

On December 18, 1971, the Alaska Native Claims Settlement Act became law. ANCSA extinguished the aboriginal title and land claims of the Alaska Native people to almost all of Alaska. In return, ANCSA directed the conveyance of 44 million acres of the total 377 million acres of land in the State to regional and village corporations together with monetary payments in settlement of these claims.

The Native people of the Village of Kaktovik, located on Barter Island and within ANWR, established the Kaktovik Inupiat Corporation in 1972. Under ANCSA, KIC was granted the right to select 92,160 acres (4 townships) of surface estate. However, KIC was limited to selecting no more than 69,120 acres (3 townships) in the vicinity of the Village. KIC was required to select the remaining 23,040 acres (one township) of its entitlement outside of ANWR because of an ANCSA provision (Section 12(a)(1)) limiting village land selections within units of the National Wildlife Refuge System to 3 townships or 69,120 acres.

Under ANCSA, ASRC was granted the right to select approximately 5 million acres of land on Alaska's North Slope. ASRC was, however, precluded from selecting lands within ANWR or the Naval Petroleum Reserve No. 4 (later redesignated National Petroleum Reserve - Alaska ("NPR-A")). Under ANCSA, regional corporations generally received the subsurface estate beneath the

surface lands selected by each region's village corporations. However, ANCSA prohibited ASRC from receiving title to the subsurface estate beneath the five Villages which were located within ANWR and NPR-A.

On June 29, 1979, ASRC and Secretary of the Interior Cecil Andrus executed a major land exchange and consolidation agreement, settling many outstanding conflicts between ASRC and the Department arising under ANCSA. Included in the agreement are provisions that, subject to later Congressional approval, would: (1) permit KIC to exchange the 23,040 acres of surface lands selected outside of ANWR and 85 miles away from the Village for an equivalent acreage to be selected adjacent to the existing 69,120 acres already selected by KIC near the Village of Kaktovik; and (2) grant an option to ASRC to exchange "in lieu" subsurface lands selected outside of ANWR and NPR-A for the subsurface estate beneath the Village lands located in those reserves if and when either reserve is later opened to oil and gas development.

The KIC exchange would permit the consolidation of the isolated acreage outside of ANWR with the lands already selected by KIC in the vicinity of the Village. The option to ASRC would permit the consolidation of the surface and subsurface estates in Native ownership, thereby assuring Native control of and the right to participate in any benefits to be derived from any development of the subsurface beneath the Village-owned surface estate.

On December 2, 1980, Congress enacted the Alaska National Interest Lands Conservation Act ("ANILCA"). Section 1431 of ANILCA approved and ratified, as a matter of federal law, the June 29, 1979 agreement between ASRC and the Department of the Interior. Section 1431(g) of ANILCA allowed KIC to exchange the isolated acreage outside of ANWR for an equivalent acreage in the vicinity of the Kaktovik Village. Section 1431(o) of ANILCA granted ASRC the future option to exchange "in lieu" subsurface lands outside of ANWR for subsurface lands beneath KIC surface estate if Congress makes a decision to open ANWR to oil and gas development.

On December 12, 1980, Congress enacted the Department of the Interior Appropriations Bill (Pub. L. 96-514). One provision of this bill opened the NPR-A to oil and gas leasing, and with the first lease sale in January 1982 ASRC's future option rights under Section 1431(o) of ANILCA to acquire subsurface lands beneath the four Villages located in NPR-A were thereby triggered.

On August 9, 1983, pursuant to administrative exchange authority set forth in Section 1302(h) of ANILCA, ASRC and the Secretary of the Interior executed a land exchange agreement whereby ASRC conveyed 101,000 acres of surface estate at and near Chandler Lake, a major inholding within the Gates of the Arctic National Park, to the United States. As its part of the exchange, the United States agreed to convey to ASRC the

92,160 acres of subsurface estate beneath the surface estate owned by KIC. In approving this land exchange, the United States recognized that it would receive, in exchange for the KIC subsurface lands, valuable inholdings in the Gates of the Arctic National Park at the time of the exchange. The alternative for the Department would have been to wait until the Coastal Plain study area of ANWR is opened to oil and gas development, at which point the United States would receive much less valuable "in lieu" subsurface lands from ASRC in exchange for the KIC subsurface lands. By executing the exchange in 1983, the United States was assured of receiving valuable National Park System inholdings for the KIC subsurface estate of the KIC lands.

I am submitting for the hearing record as Appendix C a detailed chronology on the Kaktovik exchange for the use and information of the Subcommittees. The chronology includes information on KIC No. 1, the exploratory well drilled on our lands east of Kaktovik during the winters of 1984-85 and 1985-86.

6. ASRC's Policy Recommendations

The primary purpose of my testimony today is to convey, on behalf of ASRC's 3,700 shareholders, our view that the Congress should enact Coastal Plain legislation to achieve two important goals:

First, in all fairness, to permit the Eskimo people the right to explore and develop the oil and gas potential of our 92,160 acres of privately-owned lands within ANWR and within and adjacent to the Coastal Plain study area.

Second, as a matter of national policy, to permit exploration and development of the potentially vast oil and gas resources of the Coastal Plain of ANWR, subject, of course, to prudent regulations to protect the environment, the interests of subsistence users, and the fish and wildlife values in this area.

For my people, our lands in and near the Coastal Plain study area represent our best, and perhaps our last chance to participate directly, as owners, in the economic benefits that North Slope oil development has brought to our State and to the Nation.

7. The Prudhoe Bay Operating Experience

The Eskimo people have more at stake in decisions about development on the North Slope than any other group of people in the Nation. As a result, we are careful students -- and at times have been strong critics -- of developmental activities proposed for the North Slope by both government and by industry. We have taken our views on these matters to the Courts, to the State Legislature, to the Congress and to the negotiating table.

The Inupiat Eskimo people do not, however, oppose development of oil and gas resources on the North Slope as a matter of principle or philosophy.

We oppose development where it can't be done properly and in a manner compatible with our fish and wildlife resources and our subsistence life style.

We favor development if it benefits our people and our nation and if it can be done in a manner that is compatible with our long-term interests as subsistence users in protecting the environment and the fish and wildlife values of the North Slope.

My people have watched North Slope oil development very carefully over the past twenty years. Years ago, we were very apprehensive. But we have seen impressive gains made in land use requirements, in planning, in technology, and in project execution over the years.

Prudhoe Bay's record -- in spite of our initial doubts and concerns -- is a very good one. The Kuparuk oil field development record is better. The recently opened Endicott field is even better.

We are convinced that the next major energy development project on the North Slope -- hopefully in the Coastal Plain study area -- can be and will be even better than the Endicott field. This is because the industry is making real gains in planning, in technology and in operating knowledge in the Arctic environment. Strict regulation of exploration and operational activities have assured that these gains are incorporated into industry planning, technology and practice.

As a result, we believe that energy production facilities can be developed and operated in the Coastal Plain study area in a manner that is compatible with the very important fish, waterfowl and wildlife species which use the Coastal Plain. This

will, however, require careful regulation and it will cost money. But it can be done. The national interest requires that it should be done.

We strongly support opening the Coastal Plain study area to properly regulated and controlled exploration, development and production.

8. The National Interest

While it is true that the Eskimo people have direct economic interests as well as cultural, subsistence and other traditional interests in the decision to open the Coastal Plain, our interests do not stop there.

As Americans, we believe there are larger and more important issues and values at stake here. The danger the U.S. Navy faces in the Persian Gulf in maintaining open navigation for the movement of Persian Gulf crude oil to the world's import dependent nations underlines the important issues presented, the human values at stake, and the suddenness with which assumptions about the security of oil import dependance can change.

The producing nations of the Middle East possess substantial market power in determining the world price of crude oil through their control of its supply. They exercised this power in October of 1973 and again in 1978 to greatly increase world oil prices.

They exercised their market power once again in December of 1985 to significantly reduce world oil prices. The actions of the producing nations were taken to enlarge their market share by forcing higher cost oil and gas production in the U.S. and other nations to be shut in, and to reverse worldwide gains made in energy conservation and alternative fuels technology over the past fourteen years.

The OPEC member countries' recent use of their awesome power over world oil supply to control the price of the world's most important energy resource raises grave and fundamental policy questions for this Congress, for our Nation and for all Americans.

To maintain an acceptable degree of energy independence, and to maintain freedom of choice in our foreign policy and a strong national security, my people believe the nation must explore and develop our best prospects on the public lands for major new "Middle East Class" discoveries of "Prudhoe Bay" and "Kuparuk" dimensions. And, without question, the nation's best prospect for major new "super giant" discoveries is the approximately 1.5 million acre Coastal Plain study area.

9. <u>The Caribou Concern of the Athabascan Villages</u>

At some point in the hearings, the Subcommittee will hear testimony of representatives of interior Athabascan Indian Villages. The people of these Villages take caribou from the Porcupine Herd during its migration. In the past they have

expressed concerns about the potential impact of Coastal Plain oil and gas development on the Porcupine Caribou Herd.

The Eskimo people on Alaska's North Slope do not agree with the positions some members of the Interior Villages have advocated for the future of the Coastal Plain. The Eskimo people do, however, understand their concerns and their fear of the unknown.

We were in their position in the late 1960's and 1970's. We heard and read the extravagant claims being made then that caribou would not cross the pipeline; that development of oil wells would disrupt calving; that there would be oil spills and massive pollution. At that time, we also had a fear of the unknown.

Concern about the unknown is heightened when you don't have options. The interior Indian Villages lack jobs and opportunity. Therefore, when they are told by outsiders that oil development will mean disaster for the caribou, they express their concern.

The Eskimo people ask that you hear their concerns, with sympathy and understanding. We also ask, however, that you recognize that our fears of the 1960's and 1970's were proven groundless. The Central Arctic Caribou Herd in the Prudhoe Bay area has not declined; instead this Herd has steadily grown in number. Those who predicted environmental and wildlife disaster were proven wrong by the North Slope's record of operating experience.

Yet, today, we hear the same claims, the same alarms, as if they were written by the same hand; they produce the same uncertainty and fear in the Athabascan people that my people experienced in the 1960's and early 1970's.

10. The Declining Energy Posture of the United States

When the Members of this important Subcommittee make policy decisions to govern the future of the Coastal Plain study area, we ask you to look to the facts, to experience and to history as the basis for your actions. Do not look to allegations which were long ago proven erroneous as a basis for public policy. Look, instead, to what is now happening in the Persian Gulf. Look at what OPEC power over world crude oil price and supply have done to our domestic energy industry over the past two years. Look at the facts on declining domestic oil reserves and production levels. Look at rising -- increasingly dangerous -- import levels. Look at the nation's balance of payments account for imported oil. Look at the lack of leasing, exploration and development on our OCS frontier areas off California, in the Northeast and on prospective areas of the public lands.

I am submitting for the record as Appendix D a detailed Fact Sheet on the Nation's current energy posture, on the contributions of North Slope oil development, and on the important role the lands of the Coastal Plain study area can play in national energy policy if this area is opened to properly regulated leasing, exploration and development.

11. Additional Views

On behalf of the Inupiat Eskimo shareholders of ASRC, I want to make a number of additional points for the record on the Department of the Interior's Coastal Plain Report.

a. Secretary's Coastal Plain Recommendation

The Secretary's recommendations for leasing, exploration and development of the Coastal Plain study area are proper, appropriate and supported by years of operating evidence. They are based upon a factual record of successful operating experience. We believe the Secretary's recommendations serve the national interest. We have minor differences with a number of the subjects contained in the report and we can submit detailed comments for the record if the Subcommittee feel this will assist in developing the hearing record on this subject.

b. The Well-Being of the Eskimo People

Over the past twenty-five years my people have seen major changes in our life-style. In recent years we have, for the first time in history, been able to have high schools in our villages, jobs for many of our people, improved housing, power plants to provide electricity, public health services, telephone, fire protection, and, in some of our larger Villages, running water and sewer systems. These essential public services -- which most Americans have taken for granted for generations -- were made available to the Eskimo only because oil development provided a tax base for our North Slope Borough government, and

because economic activity led to business opportunities for ASRC and our Village corporations and meaningful jobs for our shareholders.

We urge the Members of this Subcommittee to permit the opening of the Coastal Plain study area under state-of-the-art regulations and stipulations designed to protect the wildlife and the environment of this area. This will extend the life of the Trans-Alaska Pipeline and the major contributions the North Slope makes to national well-being. It will also permit my people time and, hopefully, access to economic resources to prepare for the day when the era of oil ends and the era of coal begins.

c. ASRC's Proposed Amendments

ASRC supports appropriate revenue sharing or impact aid for the North Slope Borough, for the Village of Kaktovik, and for other units of local government impacted by the development of ANWR's oil and gas resources.

I would like to submit for the record some additional documents which are directly relevant to the purpose of these hearings. The first, Appendix E, is the October 14, 1987 testimony of Mr. Oliver Leavitt, Vice President, ASRC, before the Senate Energy and Natural Resources Committee. The second, Appendix F, is an October 23, 1987 letter transmitting amendments we propose to S. 1217, a bill to open the Coastal Plain, introduced by Alaska's two Senators and other Members. These amendments are equally appropriate for consideration to

H.R. 1082, a bill by our Congressman Don Young and 146 Members of the House, to open the Coastal Plain study area.

Our amendments propose that the Committee of jurisdiction include in legislation to open the Coastal Plain provisions which would:

-- require a land use planning process in the study area;

-- centralize location of facilities and avoid duplication to minimize impacts;

-- initiate a wildlife monitoring program;

-- assign responsibility for land reclamation;

-- adopt an environmental standard of "no significant adverse impact";

-- initiate a program of revenue sharing;

-- prohibit the export of Coastal Plain oil production;

-- provide impact aid to Kaktovik, the NSB, and other affected communities;

-- establish special management areas for the Sadlerochit Springs, the Utukok region and other areas; and

-- a number of other proposals which would accommodate development with preservation of the Coastal Plain study area's environment, wildlife and subsistence values.

12. A Resolution of the Caribou Issue

This Committee has heard and will continue to hear, in the days ahead, conflicting testimony on the biological aspects of the Department's Report and on the potential impacts of permitting exploration and development on the Coastal Plain study area.

In October a series of Congressional hearings were held on the impact of opening the Coastal Plain on the Porcupine Caribou Herd which uses part of this area for a few weeks in the early summer months. Many who are opposed to opening the Coastal Plain have sought to use the caribou as their first line of defense.

The Canadian government -- after drilling the area just east of the border and building the Dempster highway through the herd's wintering area -- played this card in comments on the Report and in testimony in late 1986 and throughout 1987.

The issue was then picked up by a number of national environmental organizations in this country. The rhetoric and the pictures used were the same ones used in the early 1970's in a nearly successful effort to block the development of Prudhoe Bay and the construction of the Trans-Alaska Pipeline.

Virtually every national environmental organization has made blocking the leasing, exploration and development in the Coastal Plain the number one issue in their glossy magazines and hard hitting fund-raising appeals.

I compare the best we can do (our Coastal Plain Report submitted as Appendix B) to what they do and I am deeply depressed. This is an area of public relations, grassroots organizing and hard-ball lobbying in which the Eskimo can not compete. We lack the resources. The ground is not level; it is tilted against my people's interests. Our hope is that the Members of this Subcommittee and the Senate will decide the issues on the basis of the evidence and on the merits.

We have sought to address the concerns expressed about caribou use of portions of the Coastal Plain study area over the past year and one-half. We have sought to secure a consensus among professional researchers and biologists. I am enclosing for the Joint Committee's use and information our latest effort as Appendix G.

Finally, I submit that the best experts on the impact of oil exploration and development on the North Slope, on the caribou, and on the fish and wildlife resources of the Coastal Plain study area are the Inupiat Eskimo people. We have managed a subsistence living on these resources since time immemorial. We have endured the cycles of plenty and scarcity for thousands of years.

The Eskimo people will live on the North Slope after the oil is gone; after the media has moved on to other issues; after the political interest has waned; and after the national environmental organizations have moved on to other subjects to feature in their fund raising efforts, their membership drives and in their publications.

12. S.1804: Proposed Wilderness Designation

Mr. Chairman, in your December 1, 1987, letter of invitation to participate in these hearings you requested testimony on the future management of ANWR and on S. 1804, a bill to designate the Coastal Plain study area as "Wilderness".

ASRC and KIC strongly oppose the enactment of S. 1804. We strongly oppose designating the 1.5 million acre Coastal Plain area as Wilderness. The North Slope Borough -- county government for all of Alaska's North Slope -- concur in this position as does the State of Alaska and our Congressional delegation.

Over half of ANWR's 19 million acres have previously been designated as Wilderness by the Congress. Today, the Wilderness portion of ANWR includes over 30 miles of Arctic coastline and 9 million acres of land -- an area larger than the States of Maryland and Delaware combined.

Designating the Coastal Plain study area as a Wilderness would produce only marginal, if any, benefits to the fish and wildlife which use this area. But those marginal benefits would come at a huge cost to the public and to the national interest in the form of locking up the nation's best prospects for major new discoveries of secure domestic crude oil.

Under the amendments ASRC has proposed for the sharing of Coastal Plain bonus bid and royalty revenues we estimate that $1 to $2 billion of new revenue would be made available for promoting fish and wildlife and energy policy objectives.

The Federal share of revenue from the Coastal Plain, properly invested, could do more for threatened and endangered species of migratory waterfowl and other wildlife than could be gained from shutting down Prudhoe Bay and other North Slope fields and making all of the North Slope a Wilderness area. In

the amendments submitted with our testimony, we have proposed that revenues from the Coastal Plain be split equally between the State of Alaska and the Federal government. Under existing law the State of Alaska would receive 90 percent of these revenues.

The Department of the Interior estimates that these revenues would total $2 to $4 billion. We have proposed that the Federal share -- $1 to $2 billion -- be dedicated as follows:

- ten percent to be used for:
  - -- acquiring lands having critical wildlife and habitat value;
  - -- funding the North American Waterfowl Plan; and
  - -- improving access and visitor facilities in existing refuges;
- ten percent for the Land and Water Conservation Fund;
- five percent to fund promising energy conservation and alternative energy projects;
- five percent to control erosion of wetland areas;
- five percent for the Refuge Revenue Sharing Fund;
- three percent to fund a new Fish and Wildlife Enhancement Trust Fund;
- two percent for local impact aid; and
- ten percent to the U.S. Treasury.

Mr. Chairman, the revenue sharing program we propose produces real and important fish and wildlife benefits. The program is targeted at the areas of greatest need and priority.

And the benefits can be substantially achieved with competitive bonus bid revenue even if no commercial deposits of oil are subsequently found in the Coastal Plain.

As the Subcommittee of jurisdiction, we urge your careful review of this proposal. We also urge you to weigh and evaluate the benefits of wilderness versus environmentally sensitive, carefully regulated development. If you do so on the basis of the facts and the merits, we are confident your decision will be to proceed to open the Coastal Plain to carefully regulated exploration and development.

Conclusion

In 1980 the Congress, largely due to the leadership of the late Senator Henry M. Jackson, resisted designating the Coastal Plain study area as Wilderness when ANILCA was adopted. Instead, Congress compromised and designated the approximately 1.5 million acres of public lands in the Coastal Plain as a special "study area" and directed that a detailed five-year study be undertaken to determine whether oil exploration and development could be conducted compatibly with the needs and interests of the Eskimo subsistence users and the fish and wildlife resources of the area.

The Department of the Interior's Report, in response to the directive of the Congress, and twenty years of North Slope operating experience, in our view, answers this question conclusively. The issues remaining involve policy and politics,

and choices about how to advance the national interest and our national security.

There is no question that the best onshore prospect in the United States today is the Coastal Plain study area of ANWR. Even the National Wildlife Federation's expert geological consultant has found that the Federal and State projections of the Coastal Plain study area's oil and gas resource potential are too conservative.

Further, there is no real dispute that the Coastal Plain can be developed in a manner which is compatible with the area's important fish, waterfowl and wildlife resources.

On behalf of ASRC's and KIC's shareholders I would like to invite the Members of this Committee to visit the North Slope. There is no substitute for actually seeing the lands of the Coastal Plain and the impact of oil operations at nearby Prudhoe Bay before considering a wilderness designation decision.

The people who live in Kaktovik Village would appreciate an opportunity to host a Committee visit. Our elders have a great deal of information about the Coastal Plain and its fish and wildlife resources. Their parents, for example, showed the early explorers where surface oil seeps can be found in the Coastal Plain.

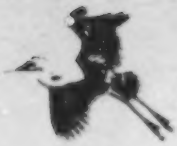
I would welcome an opportunity to take you to the site of the KIC No. 1 exploratory well which was drilled on our lands near Kaktovik during the 1984-85 and 1985-86 winter seasons. As

you will see, drilling an exploratory well under strict environmental regulation has very confined, very minimal, short term impact on the tundra. It is an activity that can be conducted in a manner which is fully consistent with Refuge purposes.

Finally, Mr. Chairman, before this Committee takes any formal action on S. 1804 on behalf of ASRC's and KIC's shareholders I respectfully request that field hearings be held in the Village of Kaktovik so that the views of the local residents may be heard. I am sure that this is a courtesy the Chairman and Members of this Committee would accord their constituents.

We urge the Members of this Subcommittee to act on the merits, on the evidence and on the best interests of the nation.

Thank you.



National Audubon Society

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STATEMENT OF ELIZABETH RAISBECK

VICE PRESIDENT FOR GOVERNMENT RELATIONS

NATIONAL AUDUBON SOCIETY

BEFORE THE SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

SENATE COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

HEARING ON S. 1804, AND ISSUES CONCERNING PROPOSALS

FOR OIL AND GAS DEVELOPMENT ACTIVITIES WITHIN THE

ARCTIC NATIONAL WILDLIFE REFUGE, ALASKA

WASHINGTON, D.C., FEBRUARY 17, 1987

Recycled Paper

Thank you for the opportunity to present the views of the National Audubon Society on this extremely important subject. The continuing health and viability of the Arctic National Wildlife Refuge is of great concern to us.

Audubon's policy, as hammered out by our Board of Directors after extensive discussions earlier this year, is that the coastal plain of the Arctic National Wildlife Refuge should be managed and protected as wilderness unless -- and only unless -- impartial scientific evidence demonstrates that 1) only the possible oil resources which might be found under the plain can meet our nation's energy needs, and 2) extraction activities for them can be done without damage to the outstanding wildlife and wilderness values which the Refuge was created to protect.

Such evidence on these points has certainly not been forthcoming; in fact, the debates, discussion, and information made available since last winter have come out overwhelmingly the other way. They have shown that not only will the proposed leasing programs cause long term cumulative and irreversible damage to the wildlife and wilderness resources of the Refuge, but also that even if the Department of Interior's projection of a seven percent chance of finding significant quantities of oil (3.2 billion barrels) are realized, there are better, cheaper, and faster alternatives to supply it to meet our nation's need to reduce dependence on foreign oil imports. Accordingly, Audubon is here today to recommend most strongly to you that you take no steps to permit anyone to proceed with oil exploration and/or leasing and development activities in ANWR.

Why do we say this? For two reasons. First, because of the enormous importance of the Arctic Wildlife Refuge to all of us, as a unique ecosystem that is part of our American heritage and system of values; and second, because of the ready availability of alternatives to extracting oil from environmentally important areas.

The Arctic National Wildlife Refuge is a national and international treasure.

The tremendous significance of ANWR as a world class wildlife resource has already been well documented. That is why it was created by President Eisenhower in 1960, and expanded and given additional protection by this Congress in 1980. Together with the adjoining Canadian national park, it is the largest protected and relatively undisturbed arctic ecosystem any where on this planet. Given the pace of development activities elsewhere in the High Arctic, it is the only place that there is a chance that such an ecosystem can survive into the future, intact.

But the Arctic Refuge is many things: it's much more than essential habitat for many species of wildlife for all or part of their life cycle. This alone is reason enough for Congress to give it total protection; but even more, the Refuge as a whole, and in particular its spectacular sweep from the mountains, down past the foothills, and across the coastal plain to the sea, makes it a world class wilderness and scenic resource as well. Nowhere else on this planet can we find quite the same combination of high sparkling mountains as a backdrop to the narrow coastal plain with the great caribou herd migrating back and forth upon it in the same ancient pattern it has followed for thousands of years . . . all in a wilderness setting. Many observers have termed this combination "The American Serengeti," and it is certainly the nearest thing we have in our nation to the great wildlife parks of East

Africa. There is no doubt in our minds that ANWR, had it been located in any other state than Alaska, would have been created as a national park long ago. It is of that scenic and wilderness quality.

We maintain that we should no more consider breaching this scenic and wilderness magnificence for a one-in-five chance of finding any oil at all, and a one-in-fourteen chance of finding something significant, than we should put dams in the Grand Canyon -- a known energy source. What is at stake here is simply too significant to the values that the American people have historically placed on their scenic, wilderness, and wildlife resources. In spite of repeated assaults on our great national parks over the past century by one commercial interest or another, only once -- at Hetch Hetchy in Yosemite National Park in 1912 -- did Congress ever agree to open up a treasure of this caliber.

The values at stake at ANWR are of such a nature that they cannot be mitigated.

We have heard much about the small (about 13,000 animals) central arctic caribou herd, and how this herd has actually increased in numbers, despite the development of Prudhoe Bay and the Alaska oil pipeline -- as if this somehow is any indication of the impact that a large scale industrial development in the much narrower coastal plain of ANWR would have on the much larger (180,000 animals) Porcupine caribou herd. Many commentors have now pointed out the fallacy of these attempted comparisons, a key difference being that the ANWR coastal plain is much narrower. This means that industrial activity there is much more likely to displace existing caribou and cause intolerable overcrowding and damage to its crucial calving grounds. Even ignoring the fact that there have been adverse impacts on the Central Arctic Herd (e.g., calves and cows are especially sensitive to human activity and avoid development activities at calving time), caribou are not the issue here. The issue is wilderness, wildlife in its wild setting, a setting the likes of which there is nowhere else.

Since the intent of any proposed leasing program is to achieve large scale development, we must look at these consequences if we are really to analyze what the overall impacts will be. Other witnesses will speak to you about the air and water pollution that has occurred at Prudhoe Bay, contrary to claims that this is somehow a "clean" operation. The fact is that an oil or gas field, with its seaports, drilling pads, compressor and pump stations, workers' facilities, haul roads, and pipelines, is an industrial operation; no matter how carefully done, it will have large scale adverse noise, air, water, and visual pollution impacts.

It may be possible to mitigate some of these impacts, although there is not any evidence yet that sufficient water supplies would be available to both build ice roads and still protect overwintering fish populations; and it may be possible to do a better job of controlling air and water pollution than was done at Prudhoe Bay. We doubt it, but even giving oil companies the benefit of the doubt, and even assuming that some portion of the wildlife will survive, it is the wilderness that will be destroyed. And it is this combination -- of wilderness and its wildlife together -- that cannot be mitigated, and cannot be put back together again.

It has been claimed that even if there is full scale development of the plain, only a small part of it, in terms of actual acres, will be physically taken. That is like taking the famous Mona Lisa painting, ripping a scratch across the middle of it, and then claiming that we are taking only a little bit. The damage that will be done if this Congress permits such industrial activity can never be undone; we must face that fact.

If any development is permitted, the ultimate environmental damage will be great.

In the Prudhoe Bay area, 60 million cubic yards of gravel has been used to construct facilities including over 300 miles of roads and 5500 acres of gravel pads. Open gravel mines cover approximately 720 acres, and an additional 3400 acres of habitat have been flooded due to the impounding of roads and pads in one of the region's oil fields alone. In 1986, 64 million gallons of reserve pit waste water -- often containing toxic substances -- were discharged directly on to the tundra from those pits on the North Slope. An additional 37 million gallons of reserve pit fluid were applied to roads on the North Slope. When all these impacts of the adjacent oil fields are added up together, that is quite a pollution record indeed, and its impact is cumulative over the years. We believe these are the same kind of impacts that can be expected, and basically on the same scale, if any invasion of the ANWR coastal plain is permitted.

You may hear testimony to the effect that mistakes and problems at Prudhoe Bay have been corrected, that there are no serious problems in the Kuparuk and Endicott oil fields, and that development in ANWR will be even better. While it is true that industry has improved its operations over the years, it would be a serious mistake to count on the development of a futuristic technology that would somehow free us from adverse environmental impacts in ANWR. In fact, an Office of Technology Assessment workshop held in Anchorage, November 4, 1987, concluded that no major innovations of technology are likely in ANWR. Current technology for oil and gas extraction and transportation in the Arctic is already considered "mature." Therefore, what we currently find in the Kuparuk, Lisburne, and Endicott fields -- all adjacent to Prudhoe Bay -- is therefore approximately what we can expect to see in ANWR. Once again, this will include reserve pits, roads, power lines, above ground pipelines, and high levels of air and water pollution.

While all attention is focused on oil extraction in ANWR, other refuge conservation programs suffer greatly.

With all of the emphasis on oil drilling, we fear that it is easy for many to forget that we are talking about a National Wildlife Refuge -- indeed, one of our most beautiful and famous units in the entire system! Therefore, we think it is appropriate to draw to this Committee's attention the fact that an incompatible development initiative such as that proposed for ANWR has seriously overloaded already strained Refuge conservation programs. Since initiation of the 1002 assessment work about six years ago, 90 to 95 percent of the Refuge manpower and financial resources have been devoted to only eight percent of the Refuge. This continues to seriously jepardize the Refuge's overall wildlife conservation program. This is evidenced by the following management problems identified by the U.S. Fish and Wildlife Service in its 1987 Annual Inspection and Program Review for the Arctic Refuge:

- Refuge staff will need to continue monitoring clean-up of old dewline sites, and small fuel spills from seismic operations during the winters of 1984 and 1985;

- Additional law enforcement staff is needed to handle growing conflicts between guides and outfitters, and enforcement of trapping and cabin permits;

- A possible problem exists with the reserve pit at the KIC well within the refuge southeast of the village of Kaktovik;

- Private fuel hauls across the refuge pose a potential threat;

- As part of the 1002 studies, surveys of migratory birds staging in lagoons, birds nesting on the coastal plain, brown bears, and golden eagles were attempted with generally poor success;

- Hunting of Dall sheep is steadily increasing, yet a complete inventory of the refuge has never been undertaken;

- No information currently exists on the size of the refuge brown bear population outside the 1002 area;

- Despite the wolf being a species of keen public interest, an inventory of the refuge wolf population has not been undertaken;

- No data exists on the extent of public use on the refuge;

- Aerial hunting of wolves is probably greater than believed in the past;

- Wolves and wolverines are being run down and killed with the use of snowmachines;

- Inappropriate developments on refuge inholdings could result in loss of wilderness values and recreational opportunities;

- There could be a problem with competition for resources or over-utilization associated with increased access due to oil and gas development and increased cash flow;

- Despite significant increases in public use, including hunting and trapping, baseline data on wildlife population outside the 1002 area is lacking;

- Law enforcement on this 18 million acre refuge is the primary responsibility of one special agent and patrols are "irregular". Lack of trained staff and a supercub type aircraft needed for law enforcement work combined with the refuge's singular focus on the coastal plain have left a major void in needed law enforcement activity." (emphasis added);

- There are serious staff morale problems related to 1) too much work assigned during a normal work week, 2) staff not being involved in decision making as much as they deem necessary, 3) reasons and rationale for decisions are not being communicated to the staff and 4) there is a general lack of communications;

- Inadequate time is being provided to analyze and publish 1002 area data;

- Meanwhile, refuge staff has suggested removing other work from the 1987 Annual Work Plan because of a perceived "mandate" to continue concentrating their efforts in the 1002 area.

The major problem for the future identified in the report is how to manage an oil and gas program on the coastal plain while avoiding conflicts between user groups and maintaining a balanced refuge conservation program.

Given these problems, identified by the management agency itself, is it any wonder that conservationists view ANWR as having been placed at great risk? And what we are dealing with here are problems that exist before the first lease has been let, the second well drilled, or mile of pipeline and road constructed. One can only imagine how bad things could get should the Interior Department's development proposal be implemented.

Studies mandated by Congress for many wildlife species in ANWR have not been forthcoming because of the emphasis on oil production by this Administration.

As you know, Section 1002, while directing that studies and recommendations be made on the subject of oil leasing, also directed that "coordinated ecological studies" be conducted for the following wildlife species: Porcupine caribou herd, polar bears, grizzly bears, muskoxen, Dall sheep, wolves, wolverines, snow geese, peregrine falcons and other migratory birds, and arctic char and grayling.

Unfortunately, all these studies, as required by the Congress, have not been done. In the past five years, wildlife inventories have been limited to the Porcupine caribou herd, muskoxen, moose, tundra swans, snow geese, and Dall sheep (although the survey for Dall sheep is considered inadequate by the Fish and Wildlife Service). Actual studies, distinguished from inventories, are almost nonexistent.

Needed still are surveys and further studies therefore on Dall sheep, grizzly bears, moose, wolves, wolverines, peregrine falcons, arctic char, and grayling at the very least.

To us, this failure to conform with the mandate of the Congress, except for some species judged most likely to be adversely affected by oil development, is a serious omission and should be corrected by this committee before any further action is taken on oil development or other exploitation of any kind. We believe that all the species named in the statute, as well as others, will be affected in some form or another by development in any event. We do not believe that this Committee or any other can have adequate information to make a final judgment on the question until these studies are prepared, as was directed almost seven years ago.

ANWR oil in perspective: We do not need to choose now.

Audubon sees no reason to question other predictions that domestic oil production will decline over the next few decades. The question is, how should U.S. policy respond? There are many possibilities; but one of them is not opening up areas of great scenic, wilderness, and wildlife quality such as this famous wildlife Refuge.

Such a policy would risk great environmental damage, while doing little to reverse expected declines in domestic resources. To document this fact, we have collected statistics on locations where the United States Geological Survey and other analysts expect future oil to be found in the United States. This work, a copy of which is attached for the record, appears in Annual Review of Energy.[1] The essence of the Report is that the great bulk of U.S. oil and gas resources are expected to be found outside places like ANWR.

Table 1, adapted from the report, shows the amount of oil estimated to lie in the ANWR and all other U.S. wilderness areas combined.[2] Included in the analysis are lands designated as wilderness by Congress as well as those, like the coastal plain of ANWR, that are under study or proposed for wilderness designation. As shown in the Table, 3.9 billion barrels of oil are expected to lie under these lands. Note that the numbers given here are so-called "risked mean" estimates, that is, they take into account the odds that some geologically promising prospects will come up dry. If risk factors are ignored (the approach taken by the Department of Interior in its report on ANWR), the numbers can be made to look higher. For instance, if we had used the 3-billion-barrel figure assigned by the Department of Interior to ANWR (for which it admits there is only a 19 percent chance of being correct), the total amount of oil projected to lie in potential and designated wilderness lands would have been 6.3 billion barrels.

Sounds like a lot. But even this inflated number is small when compared to the total amount of oil projected to lie on other U.S. land. As shown in Table 1, 107 billion barrels are projected to lie outside of wilderness areas, either existing or potential.[3]

Thus, oil resources on those lands that must be kept untouched by development to retain their special characteristics amount to only 7 percent of U.S. resources (9.2 percent if the DOI figures are used). No wonder some supporters of opening up the ANWR are tempted to inflate the amount of oil that is likely to be found there. We take their willingness to play games with the numbers as an indirect admission that their case is otherwise embarrassingly weak. (We find it embarrassingly weak even with inflated numbers.)

What happens if the oil companies are kept out of this corner of the Arctic? Are we supposed to believe that they will not drill elsewhere--that they will leave all this other remaining oil untouched? Certainly not. If kept out of ANWR, oil companies may have to work a little harder, they may have to spend more money and explore greater acreage, they may have to take a few more years to get the same amount of oil to market; but get the oil they eventually will.

Because the percentage of potential oil in ANWR and other wilderness areas is so small relative to the total, the exploitation of these lands would make only a small perturbation on the U.S. oil situation. To allow ourselves to be distracted by disputes over such relatively insignificant blocks of resources can only delay development of a meaningful energy policy. For instance, a 0.25 mile-per-gallon increase in fuel economy of automobiles and light trucks above the market-induced level will save 0.6 billion barrels of oil over the 30 years that DOI claims that ANWR could be producing. This savings equals the risked mean estimate of oil expected in the coastal plain of ANWR,[4] which shows how relatively insignificant the expected amount of oil is in the coastal plain.

Other proven oil fields now exist.

It is not as if there is not other oil, in known reserves, in the ground right now, within the boundaries of our country. It is there, and not being extracted simply because of market conditions, not because it does not exist. About 300 billion barrels of oil are currently identified in the United States that cannot be produced with today's technologies, according to the Department of Energy. This figure represents over ten times our current level of oil reserves. Even a small improvement in recovery techniques could yield many billions of barrels in fields that are already known. Why not improve techniques of recovery in locations where we are certain there is oil, before we venture into fragile frontier zones where the potential for damage is immense, and we are not even certain that oil exists?

It is also interesting to note that while on the one hand the oil industry is pushing hard for the opening of this Wildlife Refuge, they are shutting operations down elsewhere in Alaska. During the first six months of this year, eight of the twelve major oil rigs in the Cook Inlet have remained idle. Pool Arctic had five rigs working last March, but is now down to one. This company, which had almost 300 people working earlier this year, has had to cut its staff to less than 140. The same drastic decline in drilling or exploration activity is true elsewhere through Alaska, including Prudhoe Bay itself. The reason is not because there is no oil to be found or extracted; it is because it is not economic in the current oil glut.

We find further irony in this situation, when on the one hand, supporters of exploiting ANWR say its oil will help ease the dependence on foreign oil, then on the other, some of the same companies lobby this body hard to repeal the oil export ban on North Slope crude. We have recently learned that the U.S. Department of Commerce has issued an oil export license for Cook Inlet crude to ARCO Alaska, Inc. Now, ARCO is looking for buyers for 600,000 barrels a year. And just recently, the governor of Alaska, who is pushing to open ANWR, also lists as a point of his agenda, the goal of lobbying hard to remove the export ban on North Slope crude. No doubt, the explanations for this apparent anomaly will be something like "there is a world market," or "we are only doing it to help our allies . . . ." But we believe that at least we should tell the truth here and admit that oil export is one of the goals.

If reduction of dependence on foreign oil is the policy goal, there are far cheaper, faster, and safer alternatives.

Even if the Congress finally makes the policy determination to sacrifice the wilderness of the coastal plain for that seven percent chance of finding a significant oil field, and even if we finally agree to use it all in our home markets and not for export, we still should consider that it will be much cheaper and safer to provide equivalent oil elsewhere. Many alternatives exist.

For example, to save three billion barrels of oil over the 30 years that DOI claims ANWR could be producing, only a 1.7 mile per gallon improvement in fuel efficiency over the market will be needed.[5/] And this saving would be achieved, not with a 19 percent chance of success, but with a 100 percent chance of success.

Congress is going to spend a great deal of time debating the fate of ANWR over the next few years--time that would be far more effectively spent hammering out legislation aimed at improving fuel economy through research or standards. Unfortunately, improvements in fuel economy could have a negative economic impact on oil companies, so it is no surprise that they would prefer to focus attention on ANWR.

But, if the rest of us are to prepare ourselves sensibly for the coming decline in domestic oil production, the Congress must concentrate its attention on those policy areas where broad agreement is both meaningful and possible. A protracted and bitter battle over ANWR and other spectacular places is likely to prevent the very consensus necessary to solve our real oil problems.

To develop a wise oil policy, it is first necessary to take a realistic look at the likely future of transportation. What can be expected if the world runs out of oil? Will our automobiles and trucks stop in the streets? Hardly. As the price of gasoline increases, the marketplace will gradually bring into use more efficient vehicles and some combination of alternative transportation fuels such as methanol, ethanol, electricity, liquified natural gas, and possibly hydrogen. Alcohol fuels, like methanol and ethanol, have the great advantage that, with relatively minor engine modifications, they can be mixed with gasoline in arbitrary combinations. Ford Motor Company, for instance, has incorporated and improved upon a device developed in Holland which senses methanol, gasoline, or any combination of the two, and automatically adjusts the engine's fuel system to run properly.[6] The development of the "flexibly-fueled" vehicle is a technological breakthrough that gives alcohol fuels the potential to smoothly merge into and eventually dominate the transportation market whenever economic conditions should warrant.

Experience with methanol vehicles in California has proved their practicality. Here are some relevant quotes from the California Energy Commission's evaluation report:

> "Methanol is a viable substitute for both gasoline and diesel fuels...."
>
> "...methanol substitution is a strategy that offers both energy security and air quality benefits."
>
> "...methanol-fueled, heavy-duty engines can match the performance and energy fuel economy of diesel engines, plus offer a strategy for meeting stringent new emissions regulations."[7]

Of the alcohol fuels, only methanol has the potential to be produced in quantities large enough to power the current crop of automobiles, with their modest fuel economies. It is for this reason that most energy analysts are currently focusing on methanol rather than ethanol. Methanol is routinely produced from natural gas around the world today at prices that are comparable to gasoline on an energy basis, so no radical transitions in costs will be expected as long as the world's supply of natural gas lasts. How long will U.S. supplies of natural gas last? As shown in Table 1, the United States has even more natural gas than oil. This means that, in effect, the development of practical methanol vehicles has vastly increased our transportation

reserves. An especially exciting aspect of the use of natural gas as a vehicle fuel is the fact that energy conservation applied to natural gas consumption in residences and industry will now have the added benefit of extending domestic transportation fuels and improving our national security.

The costs of producing methanol from coal and biomass, as well as the acceptability of the environmental impacts, are more speculative, and therefore it is difficult to know which fuel -- methanol, hydrogen, or electricity -- will dominate the transportation picture beyond, say, the year 2030. But the major fuel will most likely not be oil, so that future generations will probably not be tempted to exploit ANWR.

The transition to alternative fuels will take place without crash government programs such as the ill-fated Synthetic Fuels Corporation. The government can, however, take modest steps to smooth the transition. For instance, a rule that would require future gasoline storage tanks in gas stations to be capable of storing methanol and gasoline would be very helpful. It would remove a major obstacle to future widespread use of methanol. In addition, the federal government could extend the pioneering work done by California and use its fleet purchasing power to purchase flexible-fueled vehicles. In this way, valuable data would soon be obtained on methanol performance in regions of the country with varying climates and terrain.

What about the environmental implications of methanol? When derived from natural gas, methanol has great advantages compared to gasoline. The same is probably true for methanol from biomass, although there is a paucity of data available to make a firm judgment at this time. Production of methanol from coal, however, definitely presents a serious long-term threat to the environment because of risks to the global climate from the greenhouse effect. The problem is that there is just too much coal. Once hooked on coal-based methanol, the world would have a difficult time getting unhooked and too much carbon dioxide would concentrate in the atmosphere. What makes the problem so insidious is the fact that there is a long delay projected between the time carbon dioxide is released and the resulting global temperature increase. There will be little visible warning before damage becomes inevitable. Because of the greenhouse effect, we at National Audubon are opposed to the use of coal-based methanol, just as we are opposed to the long-term use of coal in utility boilers. We believe it essential to do the research today that will be necessary to allow the world to escape from reliance on coal in the next century.[8/]

What about the national security implications of a gradual switch to methanol? Methanol has the advantage that natural gas is available in more countries than is oil, thereby reducing national security concerns about foreign dependence. Nevertheless, the methanol that will be consumed in American vehicles in the 1990s and early 2000s will be a mixture of domestic and foreign products. Neither methanol nor a strategy of opening up ANWR will by itself solve potential security threats from supply interruptions.

Thus, we are going to have to look elsewhere to reduce concerns about rising imports of transportation fuels. Why not concentrate on policies that have the potential for broad public support? A good example would be filling the Strategic Petroleum Reserve (SPR), perhaps increasing it to one year's supply of imported OPEC petroleum. Today, there are about 0.5 billion barrels of oil

in the SPR, while we import about 2 billion barrels per year, nearly half of which comes from OPEC.9/

Interestingly, the encouragement of flexible-fueled vehicles and methanol-ready gasoline storage tanks, before methanol comes into broad use for market-induced reasons, can dramatically increase the value of a strategic petroleum reserve. With vehicles in the fleet capable of using methanol, it would be feasible to build new methanol plants on an emergency basis while the strategic reserve was being drawn down. In fact, with flexible-fueled vehicles it becomes feasible to conceive of an emergency system that would completely insulate the United States from a foreign cutoff. During the first stage of the emergency, reliance would be placed on the strategic reserve. During the second stage foreign oil would be replaced with methanol from hastily-built plants. During the final stage, two-to-five years after the interruption, emergency conservation measures and fuel switching would help to bring the economy back to normalcy. (The Office of Technology Assessment (OTA) estimated in its study on oil replacement that emergency energy conservation and fuel switching measures could reduce imports by 1-to-3.6 million barrels of oil per day, but they would take two-to-five years to implement.10/ Methanol could provide the bridge between the SPR and the measures identified by OTA.)

Of course, from a security perspective, the United States has to be concerned about the oil-security of its allies as well as its own level of imports. But there is no reason that our allies couldn't follow a similar strategy. In fact, Japan, our most vulnerable ally, is spending $816 million on energy research, and has already come to dominate the world market in solar cell and superconductor technology.11/

Audubon is not arguing that there will never be a need to respond to a supply interruption lasting several years. But if Congress is worried about such an event, there does appear to be a reasonable strategy available to deal with the problem. And it is a strategy that both industry and environmentalists should be able to support.

Large and only partially exploited American "oilfields" already exist.

The "fuel efficiency oil field" mentioned earlier, could -- if we begin to approach the fuel efficiency standard of our allies in western Europe and Japan -- be capable of sustainably producing (not just temporarily extracting) over five million barrels of oil per day at a cost of just a few dollars per barrel. Another such "super giant oil field" also exists inside the boundaries of our country. This is the so-called "weatherization oil field" of oil and natural gas fungible for oil, which could be saved by basic insulation, reglazing, and weatherstripping of American buildings.

In fact, we were already well along the way toward doing both by the time this Administration began its efforts to dismantle conservation programs. We now have a 37 percent more efficient car fleet than we did in 1973, and in spite of the fact that we have 21 percent more households now than then, those same households use no more oil than we did 14 years ago. A detailed federal assessment of the practical potential for raising energy productivity found in 1981 that it would be very cost effective to fuel, in the year 2000, an

American economy 80 percent larger than that of 1977, with 22 to 29 percent less fuel than was actually used directly (excluding that used to make electricity) in 1977.[12] That is, more, bigger and more fully equipped and comfortable buildings could by 2000 be using 58 percent less total direct fuel than in 1977; industry could add 48 percent more value by using six percent less fuel; and transportation could increase by 30 to 70 percent for personal driving, 60 to 90 percent for personal air travel, and 80 percent for freight, while transportation fuel needs actually dropped by 15 to 35 percent.

Even these potential savings estimates were quite conservative at the time, and now we see that energy saving technologies are entering the market so quickly that most of today's best electricity-saving devices, for example, were not even on the market a year ago. Because of this acceleration in technology, it is now about six times as cost effective to save energy as it was five years ago.[13]

Even if viable alternative oil producing opportunities exist, can we do it?

The answer is, absolutely yes! In fact, as noted above, we already have been doing it. When we were faced with a real "oil crisis" in the years 1973 - 79 (as contrasted with the present oil glut situation), the Congress and the Executive Branch, with the support of the American people, did face up to the fact that we could not continue on our present energy course. Congress did respond, with laws to lower speed limits, increase daylight savings time, provide tax incentives for weatherization, and require higher auto efficiency standards. The Congress also, wisely, established a Strategic Petroleum Reserve and, at the same time as it encouraged use of other domestic resources, provided environmentally protective measures, such as the Surface Mining Act of 1977, and the Outer Continental Shelf Lands Act of 1978.

And the American people responded to these policies and to market forces in an amazing manner: By 1986, we had reduced the energy intensity of our gross national product by 25 percent, our oil and gas intensity by 36 percent, and drastically cut OPEC's market share. Since 1973, the overall energy efficiency of the U.S. economy has improved by a staggering 24 percent, saving the equivalent of 5 billion barrels of oil in 1987 alone -- or 14 million barrels (of oil or its equivalent) per day.[14] This is 47 times the estimated potential annual contribution from ANWR. And most of this was accomplished by straight forward improvements in fuel efficiency and weatherization techniques.

But at the time -- and I was there -- none of us was really sure that we could do it. In fact, the most respected energy expert in the early years of the crunch (1973 - 74) toured Capitol Hill with an erudite presentation, stating that by the early 1980s, we would need about 40 million barrels of oil equivalent from domestic systems, and if we kept imports at only double what they were in 1973, that would amount to another 10 to 15 million barrels of oil. "In other words," he said "we have to find 10 more Prudhoe Bays, or go somewhere and discover four more states of Texas and produce them at capacity."[15]

We all know now that these dire predictions were anything but reliable. Since 1973 the market has produced 150 billion barrels of oil through energy

conservation. There is the potential to achieve those savings several times over if the national government will lead the way. Oil imports today are increasing, however, and if we are going to be serious about reducing our dependence on foreign oil we need to look elsewhere than the Arctic Refuge.

CONCLUSION

Where does all this leave us? It leaves us with several very basic and simple conclusions:

1. The Arctic National Wildlife Refuge, particularly its wildlife-rich coastal plain in such a spectacular setting, is a world class scenic, wilderness, and wildlife resource. These resources are in the same category as any of the world's great national parks.

2. That no matter how carefully done, any oil activity in this place, leading to field development, will irreparably damage, for many lifetimes, these qualities. There simply cannot be any meaningful mitigation of the resources damaged or destroyed here because of their unique nature.

3. Because ample supplies of oil elsewhere under United States jurisdiction exist, these sources should be explored first, not last. The ANWR coastal plain should be about the last place ever entered in any search for oil, not among the first, as is proposed here.

4. Enormous opportunities exist to actually "produce" much more oil than could ever be found in ANWR, even by the most optimistic estimates. We have named a few of them: better fuel efficiency standards, weatherization, and a switch to alternative fuels such as methanol. At the present rapidly accelerating pace of energy-saving technology, we have no doubt that many more opportunities will come to pass well before any oil field could be developed.

5. We easily have the national capacity to take measures to produce the oil, or its equivalent, and to make this the centerpiece of a real energy policy which actually enhances our security and does not drain our country first. Such a policy would guarantee that we are ready for the time if and when we finally do run out of oil. If we follow this policy, we will have something left.

Now is the time then, to develop a real and viable national energy policy . . . one which can produce far more oil, far cheaper, and with no environmental damage. This is the policy we urge today and from now on.

1/ J. Beyea, Alex Stege, "Oil and Gas Resources on Federal Lands: Wilderness and Wildlife Refuges," Annual Review of Energy, 11, 1986, p .143.

2/ The basic figures for wilderness areas have been taken from a study commissioned by The Wilderness Society, almost all of which we have been able to update and double check against a study carried out by USGS.

3/ These estimates are based on USGS and Minerals Management Service data, as updated in Ref. 1.

4/ Assuming 112 million automobiles, 34 million light trucks, with a combined 1987 average fuel economy of 20.7 miles per gallon, consuming 2.1 billion barrels of oil per year. Market induced fuel economy is assumed to increase at such a rate as to balance increases in total miles driven per year. 1987 new combined fleet economy is taken as 24.4 mpg. With these assumptions, a 0.25 mpg improvement above the market saves 0.61 billion barrels over the 30-year ANWR field life. It is assumed to take about four years to produce oil there once development is permitted. Data has been adapted from, 1) Craig M. Hanchey and Mary C. Holcomb, Transportation Energy Data Book, Edition 8, (Oak Ridge National Laboratory, Oak Ridge, Report ORNL-6205, 1985), and 2) Monthly Energy Review, January 1987

5/ With the same assumptions as in 4), a 1.2 mpg improvement saves 3 billion barrels over the 30-year ANWR projected field life.

6/ Biologue, August 1986, p. 5.

7/ California Energy Commission, "California's Methanol Program: Evaluation Report," (Development Divsion, 1516 Ninth Street, Sacramento, California 95814) November 1986. All quotations are taken from the Executive Summary.

8/ Research is needed to reduce the costs of producing methanol from biomass. Research is also needed to reduce costs of vehicles powered directly or indirectly by electricity. (Solar sources of electricity, such as photovoltaics, should be viable replacements for coal-based electricity after the year 2000.)

9/ As of February-March 1987. (Monthly Energy Review, January 1987, p. 38-39.)

10/ Office of Technology Assessment, U.S. Vulnerability to an Oil Import Curtailment: The Oil Replacement Capability, September 1984, Figure 41, p. 121.

11/ Wall Street Journal, June 2, 1987, p. 26.

12/ Solar Energy Research Institute, A New Prosperity: Building a Sustainable Energy Future, Brick House (Andover, Mass), 1981, 462 pages.

13/ Testimony of Amory Lovins, Rocky Mountain Institute, before hearings on DOI Draft Report, January 1987, p. 3.

14/ Energy Security, Report to the President, U.S. Department of Energy, March 1987, p. 94.

15// Jack Bridges, Center for Strategic and International Studies, quoted in Congressional Record, January 23, 1974, p. 678.

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Table 1

Estimated U.S. Oil and Gas Resources Recoverable Using Traditional Techniques[a]

(in Billions of Barrels of Oil Equivalent)

	Petroleum	Natural Gas
Designated Wilderness (88.5 million acres)	1.6 (1.4%)	1.6 (1.1%)
Potential Wilderness (128 million acres, including the coastal plain of ANWR)	2.3 (2.1%)	2.5 (1.6%)
Other Onshore Federal Land (573 million acres)	19 (17.0%)	16 (10.8%)
Non-Federal Land	68 (61.1%)	99 (65.3%)
Offshore Areas	21 (18.4%)	32 (21.2%)
Total	112 (100%)	151 (100%)

a) Risked mean estimates of economically recoverable reserves and potential (undiscovered) resources. (Economically recoverable resources are those resources recoverable today or with foreseeable improvements in technology.) Adapted from Ref. 2. Includes Alaska.

THE ANCHORAGE TIMES 10/11/87

Study: Oil price at peak

Times Business Wires

Regardless of what OPEC does, oil prices will not exceed $20 per barrel for any substantial period of time, according to a study distributed by the National Center for Policy Analysis.

Coal, natural gas, and other energy sources become competitive with oil in almost all of its current uses at $20 per barrel, the study said.

Furthermore, the technology exists throughout the economy to convert from oil to other energy sources. For example:

- Compressed natural gas and liquid propane gas are being substituted for gasoline in Western Canada.
- Ethanol has captured a large chunk of the gasoline market in Brazil.
- Coal could once again power the world's ships, just as it has replaced oil in many electric utility companies.
- Liquefied natural gas can replace oil-based fuels to power jet aircraft.

"America's need for oil has been greatly exaggerated," said Samuel Van Vector, one of the authors of the study. "If the price of gasoline rose to $1.50 per gallon and kept pace with inflation, gasoline would all but disappear as a motor fuel by early in the next century.

"We can live without oil. If the price gets too high, an abundance of other energy exists to fuel the nation's economy," he said.

Van Vector and his co-author, Arlon Tussing, are economists with the economic consulting firm ARTA in Seattle.

According to the study, in the late 1970s all major government and industry forecasters overestimated by a wide margin how much oil would be consumed in the mid-1980s:

- The CIA over-predicted free world oil consumption by 70 percent.
- The U.S. Department of Energy and the Congressional Research Service over-predicted consumption by 65 percent.
- Exxon over-predicted consumption by 55 percent.

"All of these forecasters made the same basic error: They underestimated our ability to economize on energy and to use substitutes for oil," Van Vector said. Nevertheless, these predictions formed the basis for major policies that have proved costly to the economy.

"Regulations on the kinds of cars we produce, restriction on the production of appliances, regulations on the types of fuels utility companies may use, and even the 55 mph speed limit — all of these laws were based on a faulty view of our dependence on oil," said David Henderson, former senior economist for energy with the President's Council of Economic Advisors. "These laws have cost Americans billions of dollars each year."

The study does have some good news for oil producers: Regardless of OPEC production, the price of oil will not stay below $10 per barrel unless major new oil reserves are discovered.

C O M M E N T S

BY

C A N A D A

ON

Arctic National Wildlife Refuge, Alaska,

Coastal Plain Resource Assessment:

Report and Recommendations to the Congress of the United States

and Final Legislative Environmental Impact Statement

Ottawa
November, 1987

Executive Summary

Canada and the United States have a long and successful tradition of cooperation in the protection of shared wildlife resources beginning with the Migratory Birds Convention in 1916. The signing of the Agreement on the Conservation of the Porcupine Caribou Herd on July 17, 1987 continues this tradition.

The coastal plain of Alaska and the Yukon Territory between the Canning and Blow Rivers provides critical habitat for major wildlife populations shared by Canada and the United States, in particular caribou of the Porcupine herd, snow geese, and polar bears. These wildlife are important to traditional native cultures and subsistence and are of great value to all the people of Canada. In recognition of the importance of this region, Canada established a wilderness National Park and a special conservation regime to protect all of the Yukon north slope. Canada is concerned that the proposal to open the 1002 lands to full oil and gas development will cause unavoidable impacts on these shared wildlife resources.

For Porcupine caribou, the calving and post-calving season is the most critical in the annual biological cycle. Free access to high-quality forage at this time is essential to herd productivity. The calving, post-calving and insect relief habitats in the 1002 area east of the Hulahula River have been repeatedly selected by the Porcupine herd and so must be considered critical habitats. A reduction in the value or availability of these habitats would cause a reduction in the size of the herd. This herd is a major contributor to the subsistence economy of the people of the northern Yukon Territory and the Mackenzie Delta area of the Northwest Territories. The importance of the herd to them is reflected in their involvement in its domestic and international management. A reduction in herd size or alteration of its migratory patterns would adversely affect the lives and culture of these people. The United States should ensure that, in whatever decisions it takes about development of 1002 lands, the critical habitats are maintained and the Porcupine caribou herd continues to have full access to these areas.

For Western Arctic lesser snow geese, the coastal plain provides the fuel needed for fall migration. Canada has established four large Migratory Bird Sanctuaries in the Northwest Territories to ensure protection of the nesting grounds of these geese. If, however, the fall staging ground is reduced in value, the population will be reduced. The United States should ensure that, in whatever decision it takes about development, the value of the fall staging habitat on the 1002 lands east of the Hulahula River will not be diminished and will remain available to snow geese.

For Beaufort Sea polar bears, the only significant onshore denning occurs on or adjacent to the 1002 area, particularly the eastern portion. The proposed eastern marine facility would result in the loss of repeatedly used denning habitat. The United States should ensure that, in whatever decisions it takes about development, the eastern denning sites will remain available to polar bears.

Should the United States wish to take up Canada's invitation to twin protected lands on both sides of the border and thereby recognize the international significance of this unique ecosystem, Canada would be pleased to initiate early consultations to this end.

The best way to ensure the future of the many shared wildlife populations of the coastal plain, and Canada's preference, would be for the United States to follow the example already set in both the adjacent Arctic National Wildlife Refuge (ANWR) lands and on the Canadian side of the border by designating the 1002 area as wilderness. The 1002 lands east of the Hulahula River are particularly important. These are the 1002 areas most frequently used by the Porcupine caribou, by snow geese, and by polar bears.

Introduction

The Government of Canada has closely studied the Arctic National Wildlife Refuge, Alaska, Coastal Plain Resource Assessment: Report and Recommendations to the Congress of the United States and Final Legislative Environmental Impact Statement (Final Report) released on April 20, 1987 by the Secretary of the Interior of the United States. The United States Congress recognized Canada's legitimate interest in the "1002" lands of the Arctic National Wildlife Refuge (ANWR) when it required the Department of the Interior to undertake consultations with the Government of Canada (section 1005, Alaska National Interest Lands Conservation Act, 1980) in evaluating the potential impact of development on those lands.

Canada responded to the Draft Report by the Department of the Interior, released in November, 1986 with the report entitled Position Paper of Canada on the United States Department of the Interior's Draft "Arctic National Wildlife Refuge, Alaska Coastal Plain Resource Assessment" published on February 3, 1987. Using the information then available, Canada expressed concerns about the impact of development on transboundary wildlife populations upon which certain Canadians depend. To safeguard these resources, Canada urged that the United States Government give the 1002 lands "wilderness designation". While pointing out inconsistencies and omissions in the Draft Report, Canada commended the United States authorities for their thoroughness in the difficult task of assessing the environmental impact of oil development in the Alaskan Arctic coastal plain.

In its Position Paper on the Draft Report Canada raised questions about the petroleum resource estimates. After further consultations with United States officials and a thorough examination of the basic data and methodology used to prepare the estimates Canadian officials have concluded that they do not challenge the approach and resource estimates contained in the Report.

Canada continues to have deep reservations about the proposed development. The principal subjects addressed in this Paper are:

- the changes made to the concept of "core calving area";

- consideration of post-calving and insect relief habitats;

- continued comparisons of the experiences of the Central Arctic caribou herd at Prudhoe Bay and the Porcupine Caribou Herd in the 1002 area;

- effects on snow geese and polar bears;

- the downgrading of large parts of the 1002 area from Resource Category 1 to Resource Category 2;

- hazing of the distinctions between Alternatives A and B;

- treatment of water and gravel requirements;

- cumulative effects;

- international obligations which could be affected by the proposed development;

- and the failure to recognize adequately the importance of Canadian native subsistence.

The weaknesses of the Report are particularly significant given the recommendation that the Report be adopted as the Environmental Impact Statement for a leasing programme in the 1002 area.

In its Position Paper on the Draft Report Canada pointed out inconsistencies between the analysis of environmental impacts and the recommendations. The Final Report has addressed these inconsistencies by changing the environmental impact assessment, in a manner with which Canada cannot agree. The Final Report downgrades the diverse environmental impacts that could have serious impacts on Canadian interests and shared wildlife resources.

Canada makes these comments so that United States decision makers understand fully the implications of their decision concerning the 1002 lands for Canada and Canadians. In addition we believe that these comments provide guidance for a decision that will have environmental and social consequences in both countries.

The "core calving grounds" revision

Canada does not agree with the revision of the concept of "core calving" grounds. The Draft Report described the PCH core calving area as "unique and irreplaceable" and, as such, it was designated Resource Category 1 (p. 98); the remainder of the 1002 area was designated Resource Category 2. The Final Report (p. 194) states that:

> "based on further review and consultations with Canada, it is questionable to conclude that the repeatedly used concentrated calving habitat on the Jago River is "unique and irreplaceable" on a national basis or in the ecoregion... or that displacement would be sufficient to threaten the viability of the PCH. Accordingly, designations of a "core" calving area and Resource Category 1 habitat have been deleted from the final report."

It is Canada's view that this conclusion misrepresents the "consultations with Canada", incorrectly interprets the importance of the area to the PCH, and shows a disregard for the value of the area to other wildlife.

During consultations with Canada in Washington, D.C., officials of the Department of Interior pointed out that some readers of the Draft Report misinterpreted the term "core" calving area to mean a discrete site to which the caribou showed fidelity for calving, whereas in fact areas used for calving varied from year to year. Canadian officials agreed, and noted that calving has occurred over most of the 1002 area and that the "core" calving area is really an area of highest frequency and density of calving caribou. Canadian officials clearly argued, however, that whatever the area was called, its value to the PCH remained the same. They agreed with its designation as Resource Category 1. This designation is supported by the recent findings of caribou biologists. In 1985 the United States Fish and Wildlife Service hosted a workshop to discuss the potential effects of oil development on caribou. Fourteen caribou biologists, including Canadian experts, analyzed a hypothetical development scenario which was representative of the type of petroleum development which may occur on the coastal plain. The Report of the Caribou Impact Analysis Workshop, Arctic National Wildlife Refuge, November 19-20, 1985 recommended that "the areas of sustained calving use should be deleted from leasing" (p.12). Canada agrees.

For the PCH the most critical area of concentration is in the vicinity of the upper Jago River between the Okpilak and Aichilik Rivers, an area of approximately 350,000 acres. Undisturbed use of this area allows for maximum

productivity of the herd. Disruption in and displacement from this critical calving area will in all likelihood result in higher mortality. Furthermore, evidence suggests that the calving grounds of large migratory herds of caribou, such as the PCH, are "unique and irreplaceable" and of "high value" to caribou. Consensus exists among caribou specialists from government, industry, and universities that the core calving area for the PCH is unique and irreplaceable.

In addition to deleting the concept of "core calving" area, the Final Report uses a new technique to define critical areas, i.e. the overlap in 7 of 15 years instead of 5 of 14 years. By overlapping a greater number of years one is assured of producing a smaller geographic area and one which is not sufficient for calving.

The Final Report details the findings of Cameron and Dau, who examined displacement from the road systems of calving caribou following oil field development. The algorithm that they use, i.e. a significant proportion of animals will be displaced from roads and pipelines for at least 2 km and less so further out, is acceptable. However, under Alternative B, which is portrayed as significantly reducing negative aspects of development in the core calving area, the Department of the Interior report applies this algorithm to a "concentrated calving area" that is purely a cartographic creation. For example, by using the overlap from 7 to 15 years, the result is a protected area of 84,000 acres (p. 187. col.2. para. 3). In fact, since 1978, when detailed observations started, an average of 237,778 acres per year have been utilized in the upper Jago core calving area; this does not include some other areas of the western portion of the 1002 area. This average includes 1980 and 1982 when caribou did not reach the core areas in any great numbers. Excluding those years the average would be 305,000 acres per year. In both these years spring was exceptionally late on the Alaskan coastal plain. Despite the late spring the animals did arrive on the calving grounds with their calves after calving in Canada. In all years, regardless of where the caribou calve, they take their calves to this optimum habitat. It has obvious value, therefore, as post-calving as well as calving habitat.

Caribou concentrate in calving areas for various reasons. Whatever the relative importance of these reasons, be they predator avoidance, nutritional considerations, or proximity to post-calving aggregation sites, the favoured calving areas maximize survival of cows and calves. There are, of course, year-by-year fluctuations in distribution dictated by migration delayed by a late spring in the wintering range, late snow melt on the core areas, or severe storms on the coastal plain. We suggest that the animals always migrate towards the long-term preferred calving areas but are, in some years, prevented from doing so. Monitoring

over the last 15 years reveals that the largest preferred core calving area is in the vicinity of the upper Jago River watershed, bounded by the Okpilak and Aichilik River watersheds. In this area the herd requires an average of approximately 350,000 acres to ensure relatively undisturbed calving. To overlap maps for one half of the years and propose to offer some protection to an area of only 80,000 acres is inadequate.

The Draft Report contained a number of key sentences which underlined the importance of the "core calving areas". These sentences have been inexplicably deleted from the Final Report. For instance, the first paragraph of p. 108 of the Draft Report provides an explanation as to why caribou select calving grounds and describes the sensitivity of maternal cows to disturbance. This paragraph has been dropped from the Final Report. The Final Report has deleted from its discussion of calving grounds the following sentences which appeared on page 28 of the draft.

> "During 1972-85 detailed observations were made of calving areas of the PCH. As a result of these studies areas where caribou were present during calving at a density of at least 50 caribou/square mile were identified as concentrated calving areas. The core calving area is a location to which pregnant cows have shown a strong fidelity as traditionally favored calving habitat. Those concentrated calving areas used in at least 5 years during the 14-year study were identified as the core calving area. Of the 2.1 million acres identified as concentrated calving areas, 934,000 acres (44 percent) are within the 1002 area. An even greater proportion, 242,000 acres (78 percent) of the 311,000 acres of core calving area is within the 1002 area."

The above considerations lead Canada to conclude that the Final Report obscures the true importance of the PCH's calving grounds. The Draft Report's description is much more accurate. The terminology used to describe the areas of greatest cow/calf densities during the calving period does not matter. What is important is to recognize the value of the areas and to afford them protection. Caribou seek the most favourable places to give birth. The more narrowly we define the area of importance, the more we reduce PCH options to exercise what has been a successful strategy for survival. It is essential to ensure, in whatever decisions are made about the 1002 lands, that the PCH will continue to have access to its frequently used calving grounds.

Post-calving areas

The Draft Report proposed protection for about 290,000 acres of the core calving area which would have provided some protection for the post-calving areas. Since the newly defined "concentrated (cartographic) calving area", protects only about 80,000 acres in the southern-most corner of the 1002 area, new concerns arise about the well-being of caribou on the post-calving aggregation sites. According to data collected by the Canadian Wildlife Service, the post-calving period may be critical for lactating females in regaining body reserves and acquiring proper nutrients to supply milk for the newborn. This period generally occurs before the onslaught of insects; thus the animals do not need to limit their habitat selection by seeking relief from insects at the cost of using habitats high in nutrient quality and quantity. Traditionally, post-calving nursery groups concentrate on the eastern coastal area of 1002, which overlaps with the northern part of the core calving area. Both Alternatives A and B in the Final Report would develop this area. The impact of development on the nursery herd during this nutritionally critical post-calving period is unknown. In the absence of knowledge, protection should be assured for post-calving areas.

Insect relief habitat

From Table VI-4, page 120, full leasing would include 72,000-294,000 acres of coastal insect relief habitat (Final Report pp.122, 123). This latter represents between 29% and 80% of coastal insect relief habitat.

The Department of the Interior's recommendation (p.187, col.2, para.6) states that "the ability of the (PCH) herd to move to insect relief areas along the coast is unlikely to be significantly affected by pipeline/road corridors crossing the 1002 area." However, the text of the report (p. 122, col.2, paras, 3 and 4) points out that "Large groups of mosquito-harassed caribou do not readily pass beneath elevated pipelines... (and) the CAH (Central Arctic Herd) may be more likely to cross an oilfield development than would the PCH ... and (thus) there could be significant exclusion of PCH caribou from coastal areas." Reduced access to insect relief areas could lead to greater mortality particularly of cows and calves. Protection should be assured for thé insect relief habitat and no development permitted which would limit caribou movement between coastal insect relief habitat and inland foraging areas.

Comparison with the Central Arctic Herd

Canada earlier registered its concern over fallacious conclusions derived from comparisons with the experience of the Central Arctic caribou herd (CAH) at Prudhoe Bay. It is reassuring to note that the opening paragraph of the recommendation section of the Final Report rightfully cautions against comparing the situation at Prudhoe Bay with possible impacts of oil development on the 1002 lands, however, the recommendation goes on to contend that "experiences at Prudhoe provide a strong measure of assurance that caribou can coexist successfully with oil development." (p. 187) Canada's evaluation, and indeed the evaluation in the Final Report, does not support this statement. Major concerns are displacement from calving grounds and hindering free access to the coastal insect relief areas. Concerning the former, the following facts should be restated:

- The density of calving of the PCH is 14 times higher than that on the CAH range (p.118, col.2, para.1). The fact that low densities are the norm for the CAH suggests that available calving habitat is widespread, which further suggests that the CAH may have many more options than the PCH for adequate calving habitat.

- Displacement from calving grounds in response to oil development has been documented for the CAH (p.119, col.2, para.2) even considering the low calving densities.

- Predators have been essentially eliminated from the CAH calving area thereby ensuring greater calf survival and expansion of the herd.

From Prudhoe Bay we know that large herds (1000 or more animals) are less successful at crossing large structures. No one knows, or can with confidence predict, how large groups of caribou will react to pipelines, and roads. In fact the Final Report states (p.196, col.1, para.5) that "there could be large-scale exclusion of caribou from coastal areas". The Prudhoe Bay experience is germane and raises concerns regarding the effect of coastal plain development on the large post-calving aggregations.

Effects on snow geese

In the Draft Report the authors predicted that a

"... major reduction or change in distribution of snow geese using the 1002 area could occur through cumulative effects of direct habitat loss, indirect habitat loss due to disturbance, and direct mortality." (p. 122, col. 1, para. 2) In the Final Report that prediction was altered by changing a single word. It now reads: "... moderate reduction or change ...." This change is not justified by new data or explained. The Final Report has deleted mention of a possible reduction in the average number of snow geese using the 1002 area which had been contained in the Draft Report (p.122, para.2). Furthermore the Final Report does not discuss the impact of goose habitat fragmentation.

Changing the assessment of impacts on snow geese in Alternative A from major to moderate without any explanation or new evidence casts doubt on the credibility of the report. Canada questions the method by which impacts are categorized. Canada has set aside four large Migratory Bird Sanctuaries to ensure protection of the snow geese nesting areas. Snow geese should continue to have free use of their moulting, post-breeding, feeding and staging areas east of the Hulahula River.

Effects on polar bears

The Final Report does not differ significantly from the Draft Report in its assessment of the impact of development on polar bears. Canada agrees that loss of the eastern onshore denning sites will be an unavoidable effect of a marine facility at Pokok. Canada also agrees that the undisturbed onshore denning sites are important, and believes that their loss would cause a reduction in the Beaufort Sea population. These denning sites should be protected from the effects of development so that this shared wildlife population will not be reduced.

Redesignation of Resource Category 1 Land as Resource Category 2

The US Fish and Wildlife Service Mitigation Policy established four habitat resource categories and mitigation planning goals for each category. The policy defined Resource Category 1 (RC1) as "Habitat of high value for evaluation species (caribou, muskox, polar bear, snow geese, arctic char). Unique and irreplaceable on a national basis or in an ecoregion." The mitigation planning goal for RC1 land is: "no loss of existing habitat value." The definition of RC2 land is: "Habitat of high value for evaluation species.

Relatively scarce or becoming scarce on a national basis or in a ecoregion." The mitigation planning goal for RC2 land is : "No net loss of in-kind habitat value".

In the Draft Report a total of 242,000 acres of 1002 land had been designated as RC1 land encompassing the core calving area. The remainder was assigned RC2 status. In the Final Report, however, the entire 1002 has been designated as RC2 land. This change in land designation appears to be connected with the redefinition of "core calving area" to "concentrated calving area" as discussed above. In Canada's view the information contained in the draft and final reports does not support the redesignation of these critical habitats to RC1. Canada is concerned that this reclassification will ultimately effect the management and protection of these habitats. As previously stated Canada considers habitat protection and access questions to be the major issue in the long term protection of our shared resources.

The Final Report indicates that site-specific habitat designations will be conducted during the site-specific development/production phase. Canada is concerned that certain critical habitats may be alienated once leasing and exploration have occurred. It would therefore be prudent to begin now the task of obtaining more detailed information on wildlife habitat in the 1002 area.

Hazing of Alternatives A and B

The exploration and development scenario represented by Alternative B has been significantly altered in the Final Report. Under Alternative B in the Draft EIS, exploration and development would be excluded from all of Zone D (core calving area) and some of Zone C (calving and insect relief areas). In the Final Report however, exploration and development would be excluded only from that portion of the newly defined "concentrated calving area". While the Final Report states that only 27 percent of the "concentrated" calving grounds are in the 1002 area, it neglects the fact that over the long term, 85 percent of the calves are born within that 27 percent of the total calving grounds.

The changes made in Alternative B now render it little different from Alternative A. The new definition of Alternative B is too imprecise to permit accurate evaluation of its implication for wildlife. Under this formula it is impossible to determine how much of the calving grounds would be protected. In the new Alternative B, all or part of Zone D, but none of Zone C, would be excluded from development.

The Final Report states that "The primary difference in environmental concerns between Alternatives A and B (limited leasing) is the unlikely but potential risk to the PCH from oil production activities in the upper Jago River area (calving area)." (p. 191). In the Draft Report, the Summary of Unavoidable Impacts (p. 131) indicated that development of the core calving areas would include: "Displacement of caribou from approximately one-third of the core, concentrated calving areas within the 1002 area resulting in a large part of the projected population decline or distribution change for 20-40 per cent of the PCH." (p. 132)

The majority of changes in the Final Report are marked to alert the reader. However, not all significant changes have been flagged. Under the Alternatives section assumption number eight "Surface occupancy for oil and gas purposes will not be permitted within areas formally designated by the Congress as Wilderness" was excised. Is this deletion to be interpreted as meaning that surface occupancy will be permitted in areas designated as wilderness?

Water and gravel requirements

Canada's Position Paper on the Draft Report noted the inadequate treatment of water and gravel requirements. The Final Report has not satisfactorily dealt with this topic. A major oil development would require important sources of water and gravel; in the 1002 area these resources are scarce. The potential for disturbance to wildlife and habitat from extraction, storage and use of scarce gravel and water resources must be carefully documented before an informed decision to permit development can be made. Similarly the impact of desalination has not been discussed.

The Final Report downgrades these important considerations. For instance the idea that "water for drilling and production requirements may be difficult to obtain in sufficient quantities on the 1002 area...." (p. 80, Draft Report) has been dropped. The Final Report (p. 111, 2nd last paragraph) has dropped reference to the estimate of the requirement for 50 million cubic yards of gravel from the Draft Report (page 101, para. 3) and now only suggests "several million".

Mining of gravel along river bars, river terraces and some upland sites as implied on page 115, para 1 of the Final Report suggests that this activity will cover only a

small portion of the 1002 area. This may be true; however, mining and associated activity could affect a large portion of the riparian habitats within 1002. These habitats are particularly important for movement and feeding of the PCH and can be important for caribou prior to and during calving. The riparian habitats are also essential to nesting and staging migratory shorebirds. Habitat disruption and fragmentation in uplands will also have impacts on wildlife resources.

The estimates of total habitat loss (5,650 acres and 7000 acres) contained in the Final Report (p. 115, last paragraph) seem to exclude the areas to be mined for gravel, 500-750 acres per site at as many as 15 different locations. This translates to 7500-11,250 additional acres directly lost plus an unknown area affected by this activity.

The figure of 7000 acres lost from secondary effects includes losses due to pollution. The loss seems to be calculated (Final Report p. 115, 2nd last para.) on the basis of dust spray and water impoundments. If the Prudhoe Bay figure for 1985 oil spills (82,216 gallons) is typical -- normally the amount of such pollution would have decreased since initial problems in start up -- and one or more oil fields this large or larger are developed, there may be a loss of habitat and productivity over some very large areas. Given a 30 year project life, perhaps a million gallons or more of petroleum products could be spread over the landscape. In addition there are the unknown effects of gaseous and particulate emissions and drilling fluids. Furthermore, no mention is made of the estimated habitat loss caused by seawater used for "waterflood" (Final Report p. 116, para.2).

The Final Report (p. 199) now includes the sentence "Even though the gravel may not be optimally located for all possible developments in the 1002 area, generalizations about gravel shortages are inappropriate." Canada suggests that the importance of this factor demands additional information before proceeding with the decision process.

Cumulative effects

The Canadian Position Paper on the Draft Report counselled that the cumulative effects of developments in the coastal plain and offshore ecoregions should be considered. Canada is pleased that the Final Report begins to address this important question. However, the treatment of cumulative effects (p. 161) is incomplete and the Final Report merely recommends future studies. The Final Report acknowledges cumulative effects by providing a list of

projects which might occur but does little to evaluate their effects. To suggest, in the Recommendation (p. 188), that "The potential effects (of development) have been considered fully throughout the final report/LEIS and in the development of ... recommendations" is inaccurate without a thorough consideration of cumulative effects.

The absence of a detailed consideration of cumulative effects in the Final Report highlights some fundamental ambiguities concerning the future of ANWR. Some parts of the Final Report seem to indicate an effort to return the area to a natural state. Ambiguity in long-term and short-term effects underlines some of the analytical problems which we have attempted to deal with here. The Final Report would be a more useful document for decision makers if it encompassed an analysis of post-production effects including a discussion of the long-term options for the area.

International obligations

Canada and the United States have long recognized mutual responsibilities and obligations to protect and conserve transboundary wildlife. In addition to the Migratory Birds Convention (1916), the purpose of which is the preservation of shared populations of migratory birds, Canada and the United States have each signed the following accords:

Agreement on the Conservation of Polar Bears (1976). Article II of this agreement "requires that appropriate action be taken to protect ecosystems of which polar bears are a part, especially denning and feeding sites".

North American Waterfowl Management Plan (1986). This plan recognizes the need for joint co-operation in conservation of waterfowl and their habitats. Under the proposed recommendation of full leasing even with mitigation, the first four principles recognized in the N.A.W.M.P. will have been violated. Further, the likelihood of achieving the stated winter index goal for Western Arctic Lesser Snow Geese (page 12) will have been diminished.

Agreement on the Conservation of the Porcupine Caribou Herd (1987). Under this Agreement Canada and the US are committed to "take appropriate action to conserve the Porcupine Caribou Herd and its habitat."

It should be noted that the Department of the Interior predicts that even with mitigation , Alternative A

would have major impact on caribou and moderate impact on snow geese and polar bears. Under Alternative B with mitigation the impacts are expected to be moderate for all three species. Given the definitions provided in the Final Report, and specific descriptions of effects and mitigation together with the international accords in place Canada submits that the Department of the Interior's recommendation, if followed, could put the US in violation of these four international accords.

Subsistence

A decision to open the Arctic National Wildlife Refuge to full oil and gas development will have major impacts on the shared wildlife resources which we have previously described. The heritage value of these wildlife populations is important to all Canadians but none more so than the people of the northern Yukon Territory and the Northwest Territories who have traditionally depended on the caribou, the geese and the bears and other species for sustenance, both nutritionally and culturally. In addition to these important values these resources offer, in the long term, a sustainable economic opportunity which needs to be considered. Canada is concerned with the expected effect of the 1002 development on the transboundary resources which will in turn impact the traditional harvest. In many instances there is no suitable alternative source of food. Page 140 of the Report refers to the reduced subsistence harvest that could result from development, but impacts of that loss are never assessed or discussed especially as they relate to Canada. Canada expects that the United States will not take actions affecting the shared wildlife resources and in particular put in jeopardy the way of life of Canada's northern citizens.

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